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TRANSACTIONS & STUDIES
of the
College of Physicians of Philadelphia

Volume 27
(Fourth Series)

Number 1
(July 1959)

Concerning Certain Psychological Principles which have been Derived from Clinico-pathologic Study[1]

By RAYMOND D. ADAMS, M.D.[2]

PRESIDENT RHOADS, Fellows of the College of Physicians and Guests: Permit me first to tender my thanks for the invitation to appear before you as Weir Mitchell Orator, a post around which are clustered so many pleasant and honorable associations. I am fully sensible to the duty which this selection places upon me and to the special difficulties which it imposes. This Society constitutes an audience of the widest professional competence with interests in all branches of medical science. By long established custom it has come to expect from each of its orators the report of a new discovery or the expression of the seasoned views of a physician or scientist on some topic of general medical interest. In this reasonable expectation I fear I may disappoint you, for much of what I have to say is familiar, and undoubtedly many of the members of your society could expound the ideas I am about to present far more eloquently than I.

That a neurological physician from Boston should address this Society in a lecture which commemorates the life and works of Silas Weir Mitchell has a degree of propriety which deserves passing comment. You may know that one of my predecessors at the Massachusetts General Hospital, Professor James Jackson Putnam, was a contemporary of Weir Mitchell and expressed his admiration for the clinical and scientific work of this great physician on several occasions. Moreover, Dr. Mitchell was a member of that select and intimate circle of versatile American physicians, so well represented in Boston in the nineteenth century, whose talents ranged broadly in medicine, science and literature. He was a close friend and frequent correspondent of our Professor Oliver Wendell Holmes.

Before choosing a topic for this occasion, I refreshed my memory of some of Dr. Weir Mitchell's work. It covers such a broad field of medicine that it leaves the present and any future orators much latitude, if they essay, as the stipulation of this lectureship enjoins them to do, some topic consonant with the interests of this distinguished physician. Two aspects of his work attracted my attention—1) his interest in psychic phenomena as revealed in his clinical studies and novels; 2) his acknowledged

[1] Weir Mitchell Oration XV, College of Physicians of Philadelphia, 4 February 1959.

[2] Bullard Professor of Neuropathology, Harvard University, Chief, Neurology Service, Massachusetts General Hospital, Boston 12, Massachusetts.

skill in clinical observation and in drawing cogent inferences, some of no little scientific merit, from the study of the sick. The thesis which I intend here to submit and to document in a limited way—that the clinico-pathologic method of case study represents a valid approach both in the investigation of disease and in the acquisition of knowledge of the natural functions of the mind, would meet with his approval, I am sure. And it may serve to remind us that not all of the problems of medical science, particularly those relating to the human nervous system, need find their immediate solution through the techniques of biochemistry and biophysics which are presently so widely extolled in the American and Russian press.

But before proceeding to the main topic of my discourse, a brief discussion of the *method* of *medical observation*, also called the *clinico-pathologic method*, may be of some value. Probably the method is as old as medicine itself but it first became fruitful during the nineteenth century when clinical medicine began to feel the guiding influence of pathology. Its application to problems of human nervous function will forever be associated with the name of Charcot and his followers at the Salpêtrière in Paris.

Essentially the method consists of "accurate and unbiased observation of organ (here nervous) function deranged by disease". It involves a series of steps as follows:

1). The detailed history of an illness, including both the patient's statement as to what is wrong and the observations of family and friends as to behavioral changes.
2). The systematic examination of the patient's nervous function.
3). The gross and microscopic examination of the central nervous system of those so unfortunate as to succumb to disease.
4). The correlation of the manifestations of disturbed nervous function, both the subjective and objective, with one another and with morbid anatomy.
5). The drawing of inferences as to the function of the nervous system and of mind.
6). The testing of these tentative hypotheses in other clinical situations or in animals and man in the experimental laboratory.

Many difficulties are encountered in the effective application of the clinico-pathologic method some of which are not fully appreciated even by clinical investigators. However, time does not permit further elaboration upon these matters.

I would like now to invite your attention to certain features of mind and its nervous arrangements which have been learned by the application of the clinico-pathologic method. At the very outset it would seem desirable, however, to fix the limits of our discussion lest I become too diffuse and am forced to speak and speculate on matters about which little or nothing is known. I propose to exclude the large category of psychoneuroses, schizophrenia and manic depressive psychoses from the orbit of this discourse and to refer only to those diseases of established pathology which induce predictable changes in psychic function.

Limits of time prohibit an examination of all the psychic derangements which result from disease of the brain, and we must concentrate on a few which are of current interest or which may be profitably studied in the clinic and pathology laboratory in the near future.

I. Consciousness and Its Neurological Substratum

Consciousness, which is the very core and nucleus of our psychic life, has been investigated in a number of physiology laboratories in recent years and several interesting hypotheses concerning its relation to other mental functions have been formulated. Some of these facts and hypotheses demand our contemplation for they have application to the practice of medicine.

When the word consciousness is brought up for general medical discussion, all informed physicians in the audience will at once think of the interesting recent publications of Bremer, Ranson, Magoun, Lindlsey, Jasper and many other contemporary anatomists, physiologists

and psychologists. And the two excellent volumes, one the "Symposium on Brain Mechanisms and Consciousness", the other "Reticular Formation of the Brain", which have recently been published, present well the existing state of our knowledge as gained from recent investigations. But it would only be fair to say it was the clinical neurologist and neurosurgeon who, confronted daily with the concomitance of brain lesion and derangement of the mind, were the first to appreciate that small lesions in the upper part of the brain stem and thalamus produce prolonged disturbances of consciousness. Moreover, it has been possible to discern two clinical entities in diseases of this part of the neuraxis, one *true coma* with its characteristic unreceptiveness of external stimulus and inner need and unresponsiveness, and *pseudocoma* with retained receptiveness but nearly total unresponsiveness owing to virtual paralysis of all four extremities and all bulbar musculature (face, tongue, jaw, pharynx and larynx). Doubtless other syndromes representing partial derangements of consciousness will later be defined.

Two cases are presented which exemplify these clinical conditions. It is to be noted that in true coma, represented in the first case, the lesion was located in the tegmentum of the midbrain and subthalamus, whereas in pseudocoma, the second case, the morbid change was in the base and tegmentum of the upper pons and lower midbrain leaving the diencephalon and upper midbrain unaffected. In other words, the difference between the two cases was the involvement of the reticular formation of the upper brain stem in one but not the other. This fact appears to be in harmony with recent physiologic experiments which demonstrate that in animals the destruction of this loose array of neurones in the upper brain stem produces a prolonged coma with slowing of the electroencephalogram, and the stimulation of this same region arouses the sleeping animal and desynchronizes the brain waves. Further, the clinical state obtains some clarification from the experimental findings that sensory stimuli not only initiate volleys of impulses which traverse the specific sensory tracts to the thalamus and cortex but also extend, via collaterals, to activate this reticular formation; and it in turn sends and receives fibers from all parts of the cerebral cortex. Alcohol, barbiturates and some anesthetic agents act by suppressing this part of the reticular formation. Penfield has attempted to subsume this entire system under the term *centrencephalon* and has postulated that it is the highest center of the brain, the integrating mechanism of the entire cerebral cortex.

However attractive and provocative this hypothesis may be, it is open to certain criticisms, one of which is that it equates consciousness with the mere appreciation of "sensory impulses which reach the cerebrum" or with the capacity to react to stimuli. There is an inherent danger in this oversimplification and with the assumption that consciousness is a unitary state which can be localized within the upper brain stem. It requires but little reflection to appreciate that our own states of consciousness, which are the foremost facts of our existence, are not easily reducible to a series of sensory events. A remarkable and important feature of our consciousness is its continuity throughout every instant of waking life. From a vague, inchoate beginning in infancy until the termination of life there is never an unrecoverable hiatus in this continuum, except in sleep and in the instance of certain diseases of the central nervous system. A second quality is that of incessant change which takes place from minute to minute, aptly likened by William James to the flowing of a stream. Another essential attribute is its personal character; always it is "I" who is having the experience —a person with a finite spatial-temporal existence, separable from other parts of the physical world. This self consciousness requires at all times a clear perceptual and conceptual distinction between ourselves and the world about us. It is more than a succession of sensory events; in fact our own introspection informs us that it is the medium of coherence between separate experiences, whether excited by external stimuli or within ourselves by ideas or

thoughts in the form of word symbols. Moreover, consciousness always maintains a focal or central point and a periphery, which is called the process of attention. All of this and more is embodied in our personal concept of consciousness and the thoughtful clinical investigator senses a vague remoteness from reality when he observes the experimentalist, in the interest of expediency, reducing consciousness to a mere awareness of stimuli, a process which may go on and off like an incandescent light. This is not to deny that consciousness is a separable quality of mind with its concomitant behavioral manifestations but merely that the study of it in animals in which it is equated with responsiveness to stimuli can do no more than elucidate one manifestation of it.

On the anatomical side the conclusion that there is an "awake" or "consciousness center" in the upper brain stem merely because lesions here in humans produce coma exemplifies our inveterate tendency to "hypostasize and anatomize abstractions". The important fact which has been established is that the reticular formation in the upper brain stem is in intimate relationship to specific sensory fiber systems and to the cerebral cortex and that the latter as an integrative mechanism depends more on these central connections than with intercortical ones. To say, however, that the reticular formation is "higher" or is the "pace maker" or "integrating mechanism" because it is the site where the smallest lesion may have the most widespread effect is illogical. The further study of these problems should turn to the analysis of the many partial disorders of consciousness which result from focal lesions of man's brain; and the subjective phenomena should be granted the same primacy of value as the behavioral change.

II. The Intellectual (Cognitive) Processes and the Cerebrum

Let us turn now to some of the observed alterations in perceiving and thinking which attend brain disease, and for which modern psychology uses the word *cognition*. In commenting on these cognitive processes apart from the conscious state of which they are an essential ingredient one must answer critics who argue that cognition cannot be treated separately from conation and affection, the other two Kantian divisions of mind. The importance of dissecting them, I believe, even though it may seem artificial is that scientific study must begin by analyzing its subject matter.

The idea that mental ability, cognition or intelligence is a highly individual quality with a range from feebleminded to genius, that heredity is an important determining factor in its development though education and environment are not without their effects; and that individual differences in this quality of mind are expressions of fundamental differences in the organization and function of the brain—all these have a long and interesting history, but time does not permit me to review it with you. Only in the last half of the 19th century, however, did the study of clinical and pathological manifestations of brain disease persuade us of the necessity of investigating the cognitive functions per se. And, of course, scientific advance entailed measurement, which was undertaken on a large scale in the early part of this century.

The possibility of subjecting the separate components of mind to specific test suggested itself to several leading scientists in the period 1880–1890. Francis Galton began testing sensory functions in his laboratory at this time, and in 1889 Oehrn, working under the direction of Kraepelin, published the results of the first actual measurements of mental capacities, in an effort to show in what manner patients with mental disease differed from normal. Binet, a student of Charcot in Paris, Munsterberg, Jastrow, Cattell and Terman in this country, extended these observations into the classroom. Since then the whole field of psychometry has developed.

The nature of intelligence or intellectual functions and their relationship to the anatomy and physiology of the brain continue to be fundamental problems in neurological medicine. The physician in this field is often confronted by individuals who have failed to de-

velop mentally—to be amented in the language of Esquirol; and then there are the unfortunate individuals who have lost their mental powers through age or disease, a state known as dementia. Thus the initial impulse for the scientific study of the intellect came from the clinic and it continues to be prompted by the needs and daily problems of the clinic.

The subject of brain structure and its relation to intellectual ability has been studied only in its more general aspects. The human brain is extremely variable in weight and size and only at the extreme limits of largeness and smallness is there a rising incidence of enfeebled mentality or exceptional ability. Lassek in his recent monograph on The Human Brain reports that the smallest human brain on record weighed only 289 gms. and belonged to a mental defective, whereas the largest, weighing 2012 gms., was that of Turgenev, the celebrated Russian writer. The average weight is about 1450 gms., the female brain being lighter by 50 gms. Brains below 1000 and above 1600 gms. are exceptional and more often than not belong to mental defectives. Brain mass correlates better with height than with intellect, within the more normal range. Brain weight–body weight ratio is not overly informative; for humans it is about 44–1, in comparison to the marmoset which has a ratio of 27–1 and the whale 8500–1. Age is also a major factor. The brain doubles its weight from birth to the first year and thereafter its mass increases at a diminishing rate to the age of 20–25 years. From the age of 30–80 years there is a 10 per cent loss in weight. Inasmuch as the human brain contains 14,000,000,000 nerve cells Burns, in his discussion of the Mammalian Cortex, has calculated that this would mean a loss of several thousand cells during each day of adult life. Presumably 1,000,000 nerve cells have disintegrated, like meteorites, in this audience since I began to speak—a most alarming thought! Intelligence test scores parallel brain weight closely during early life but not in late life and senility, according to most recent reports.

In reviewing the literature on intellectual impairment in special types of human brain disease two hypotheses suggest themselves for study. These have recently been examined by McFie and Percy.

a) Is intelligence a single or unitary trait or is it composed of more or less independent abilities?

b) Does this trait or group of abilities depend on the normal function of some particular part or parts of the brain?

It is not possible, in this brief time to review all of the arguments for and against intelligence being a single monarchic mental power or a pleurality of separate powers. Spearman, Lashley and many others offer evidence in favor of both theories. One's view of this problem depends somewhat on one's definition of intelligence, whether a sum total of those qualities possessed by the most gifted members of our society (Galton) or "the innate ability to learn", "educability", "problem solving ability" and capacity for clear thinking especially along abstract lines. The tests most commonly employed require the subject to be alert, willing to take the test and to try to excel in it and to be able to understand and use language. Perception, learning, memory, ability to calculate, discriminative judgment, all these and more are exercised in successful mental performance.

General intelligence tests have been administered to patients with brain injury of known type and location and a number of interesting results have been obtained. One finding is clear enough, that disease of the brain does not interfere with the performance on each of these tests to the same degree. Retentive memory correlates poorly with verbal ability, visual-spatial discrimination, calculation and arithmetic ability and capacity for abstract thinking. The latter do cross-correlate with one another but not to a high degree. Similarly the process of attention may be affected separately, as shown by the fact that the patient may be incapable of maintaining attention, which in turn may impair his performance on all tests of mental function; or the achievement of good results may be hampered on these tests even

though the patient appears to be fully attentive. Unfortunately attention itself as a unitary process has not been subjected to careful measurement in brain disease but one would expect derangements in this sphere to be related to the more fundamental process of consciousness.

In searching for the anatomical substratum of dementia several facts have emerged. The thalamus itself has been identified as playing an important role in mentation, as illustrated in the case of Stern where there was a widespread degenerative disease limited to the thalamus. Lesions of the dominant hemisphere impair verbal functions out of proportion to nonverbal ones, even when there is no true evidence of aphasic disorder. Arithmetic calculation suffers disproportionately in lesions of the dominant parietal lobe, indicating a relationship to the clinical state known as acalculia. Visual-spatial discriminations suffer the greatest reduction in abnormalities of the nondominant parietal lobe. Abstract reasoning is said to be reduced most in frontal lobe disease although there is still much uncertainty as to the accuracy of this statement.

Further study and more exact definition and measurement of these special brain functions is necessary before we can begin to understand their anatomical relationships; and anatomical studies must become more systematic and quantitative. The data at hand seem to support Spearman's theory of general as well as several special factors which are crucial to normal intellectual activity.

III. Perception and its Disorders

Our notions of sensation and perception have undergone many modifications in recent years in part because patients with diseases of the brain have revealed sensory findings incompatible with older theories. The conventional dichotomy of sensation and perception has been challenged for the reason that lesions which interrupt sensory nerves and tracts are observed to interfere with both functions, whereas cerebral lesions, which impair perception, are now believed to have a definite though variable influence on the most elementary forms of sensation. This latter effect has been difficult to define because the patient exhibits a peculiar indifference to his defect (we say he lacks insight or denies his disease) and is inattentive to stimuli applied to or arising within the affected parts. Anatomical study suggests not separate loci for sensation and perception but edifies the entire posterior temporal, parietal, occipital parts of each cerebral hemisphere as a vast suprasensory integrative area. Destructive lesions here cause to become manifest a remarkable array of gnostic defects; and stimulation of these parts, naturally as in a convulsion or by the surgeon on the operating table, evokes complicated hallucinatory phenomena (i.e. perceptions in the absence of observed stimulation). The integrative action of these parts of the brain and the thalamus and brain stem is poorly understood but there is much anatomical evidence which indicates that the whole system functions as a unit. Complex visual hallucinations, known to arise upon stimulation of the cerebral cortex, may also be associated with thalamic and mesencephalic lesions (the so-called *peduncular visual hallucinosis of Lhermitte*) and Fisher and I have observed a number of cases of *pontine auditory hallucinosis*. In the latter the patient reports a repertoire of chimes, chants, fragmentary harmonic sounds like an orchestra tuning up, whistles, sirens and other noises and even a voice calling one's own name (the nearest to audition of words). There is no measurable loss of hearing and the hallucinations do not interfere with the reception of ordinary auditory stimuli. The anatomical pathology of these cases has never been studied thoroughly, nor have the clinical anatomical relationships of other sensory phenomena been worked out in detail, except where the interruption of peripheral nerve fibers and spinal cord tracts has occurred. Moreover, the prominent role of hallucinations and the derangements of attention and sleep in delirium emphasize the possibility of a brain stem or diencephalic pathology as yet unfathomed. Here the experimentalist needs to delineate more clearly the funda-

mental nature of the psychic changes, for the disease state is but a syndrome.

IV. Memory

All investigations of intelligence, to which I have alluded, indicate that retentive memory is a process closely related to, yet qualitatively different from that of intellection. Profound disturbances of memory, to the degree that new material cannot be retained for more than a few seconds, is incompatible with all forms of intellectual activity, as would be expected. It is, in this respect, as widespread in its effects and as devastating to tasks requiring intellection as are inattentiveness, drowsiness, stupor and coma. Yet the opposite state may prevail in which the memory span for newly presented material is greatly reduced, to as brief a period as two to three minutes, without impairment of the ability to solve any problem that can be finished within that span of time. One may infer that the mechanisms which subserve memory function have an anatomy and a physiology different from those of intellectual functions.

Memory involves many things—the making of an impression, the retention of some record of that experience, the subsequent recall and reproduction of it. Excluded from serious consideration here are single parts of this process, such as the more or less permanent modification of the physical state of any object or cell by some previous activity. In this broader psychological sense, memory is but one side of perception and learning; and the relation of the object or rather its memory image epitomizes the whole problem of mind and matter.

A number of clinico-pathological observations have recently shed some light on the anatomy of memory mechanisms. The most consistent lesion in the remarkable disease known as Korsakow's psychosis has been in the mammillary bodies and medial parts of the diencephalon. Dr. Victor and I have endeavored to show that this special psychosis is but the mental component of Wernicke's disease and is due to a critical degree of thiamine chloride deficiency. Patients so afflicted, after an acute onset of pronounced mental confusion with paralysis of eye muscles and ataxia of gait, rapidly improve when given thiamine chloride alone or in an adequate diet. They then exhibit a state of reasonable alertness with minimal perceptive defect but with a total inability to recall and reproduce events of the past few weeks, months or years (events which occurred before onset of illness) and an equally striking inability to memorize, i.e. to learn. This improvement may continue for a time but much of the damage is often irreversible and leaves the patient permenently handicapped solely because of this inability to learn new experiences and to recall past ones. As the memory span lengthens to 3 or 4 minutes it may allow the patient to achieve a normal or superior score on a Wechsler-Bellevue intelligence test, and 5 minutes later not remember having taken the test or having seen the examiner. Tumors, aneurysms and other diseases affecting the mammillary bodies and walls of the third ventricles are known to have similar effects on learning and memory.

A case is presented which illustrates the lesions in Korsakow's psychosis. The fine anatomical details of this disease have never been elucidated but are now under study in several laboratories including our own. Progress here has been slow and halting because of a lack of knowledge of the normal human thalamus for which satisfactory reference material has not been available. The subtle qualities of the lesion in vitamin B deficiency recommend it for study, especially if the disease has existed for some months prior to death and the full range of functional deficit has been determined.

Equally exciting and provocative has been the confirmation of a poorly documented observation by Glees and Griffith of severe retentive memory defect following upon bilateral infarction of the hippocampal convolutions. Scoville made the accidental discovery that surgical excision of these parts as a therapeutic procedure in psychotic patients has a similar effect, and Penfield and Milner produced a clinical picture much like Korsakow's psychosis by excising one temporal lobe in patients

believed to have preexistent disease in the other one.

A case is presented, a patient observed by C. Miller Fisher and myself, who was noted to have suffered a permanent loss of retentive memory and capacity to learn after occlusion of branches of the posterior cerebral arteries and infarction of medial and posterior parts of each temporal lobe.

The significance of these new findings is at once evident when it is recalled that the hippocampus is connected with the mammillary bodies and tegmental fields of diencephalon and midbrain which are the site of the abnormality in Wernicke's disease. One may postulate then that the hippocampi, fornices, mammillary bodies and medial thalamic nuclei, the mammillo-thalamic tracts of Vicq d'Azyr, the thalamo-cingulate tracts, constitute a system of great biological importance which in conjunction with all parts of the cerebral cortex represent a mechanism for learning and memory, whether of a relatively simple variety as in the elicitation of a conditioned reflex or the memorizing of nonsense-syllables or complex, meaningful material. The detailed workings of this mechanism demand penetrating anatomical, physiological and psychological investigation.

We have the impression that this basic memory mechanism may be temporarily abrogated by disease with complete recovery of function. Fisher and I have collected notes on more than 15 patients in the last few years, all middle-aged or elderly and without sign of psychiatric illness, in whom there has been a sudden onset of global amnesia which lasted some hours. Without change in color, or any overt manifestation of seizure, the patient suddenly betrays, by a bewildered expression or a remark, that he does not know where he is or what he has been doing. Throughout the attack, while conscious and apparently in contact with his environment and able to move gracefully, to speak coherently, to read and understand spoken words, to calculate (in one instance), to recognize common objects, to drive a car, or to prepare a salad, the patient is unable to orientate himself or to hold in mind any new information given him concerning his orientation. During the attack there is retrograde amnesia for hours or days; and, after it is over, the amnesic period shrinks to the length of the period represented by the attack itself. The attack passes off leaving no residual abnormality, and, except in one instance, has not recurred. Suspected usually of being a stroke or a seizure, clinical study, x-rays, electroencephalography and lumbar puncture have provided no clue as to its nature. We believe this to be a unique clinical state involving these regions which are critical to memory. The condition awaits pathological verification.

V. Will, Volition, Conation; Impulsivity and Purposeful Mental Activity

If you will permit me to speak for a few more minutes, I would like to remark upon two other features of mind which at the present time are largely beyond the orbit of scientific study but which merit thorough investigation. One of these is will or volition, also called conation, the other is affection or emotion.

It is apparent when one reflects on the matter, that volition or conation shows its influence in all perceptive and cognitive processes. In test procedures the whole efficiency of an intellectual process may in a large measure depend on the effort the patient puts into it, that is to say, how hard he tries. Weakness of motive or lack of desire to succeed hampers action and may prevent the attainment of ends well within the reach of the subject. Strong effort, contrariwise, often permits excellence of performance beyond that which would be expected of the individual.

The neurologically-minded physician, pondering the various derangements of mind by disease, must take cognizance of this quality and inquire as to whether it constitutes an essential and measurable attribute of psychic function. Does disease of the brain reveal something of the nature of impulse to action and volition?

In seeking further information on these matters we have found textbooks of neurology and

psychiatry to be strangely silent. By traditional usage the term will or volition has both a narrow and a broad psychological meaning. In its broad sense it is more or less synonymous with all the psychic activity which arises from an idea or mental stimulus (in contrast to a physiological one) and accomplishes some result. In its more restricted sense it refers to action arising from an idea and ending in the realization of that idea. The basis of will is said to be an impulse which has its origin in a physiological state and leads to mental unrest. The impulse expresses itself in producing some physical change. In the more precise language of Dewey volition is defined as "regularized, harmonized impulse . . . consciously directed towards the attainment of a recognized end which is held desirable". He points out that the elements of volition or act of will involve, over and above the impulse, knowledge and feeling.

In evaluating this complex attribute of mind the clinical investigator has recourse to two sources of information. He may inquire of the patient as to his state of mind, his conscious awareness of his impulse to action, of the persistence in his mind of a certain idea or of a goal. Or, behavior itself may be taken as an expression of whether the patient is capable of volition i.e. evidence by act or verbal report of sustained attention, of persistent and self-directed activity, of restless, aimless movements of an apprehensive mental state, or merely continuous psychic activity of a particular type.

In comparison to the incessant psychic activity, the press of speech and movement of the average normally motivated urban individual with only brief periods of idleness from morning until night, patients with brain disease are frequently inactive for long periods of time. There is a poverty of both psychic and motor activity. An English teacher on one of our wards, with an aneurysm of the anterior cerebral artery, uttered not a single word for a period of several weeks and was judged to be aphasic until one day when two of her room mates were reciting a poem and found themselves unable to remember the fourth line of the third stanza, she supplied the missing line, speaking clearly, and then lapsed into her mute state for several weeks more. These patients are likely to react only to their immediate situation, making no effort to plan for the future, and their demeanor provides no hint of anxiety. In all diseases which cause profound confusion or stupor this apathy, hebetude, silence and paucity of movement are characteristic. The most extreme degree of it was noted by Hugh Cairns in a patient with a third ventricular tumor and for this state the term *akinetic mutism* was proposed, with the implication that the morbid anatomy was diencephalic in location. However, we have seen this psychic peculiarity most often with a variety of diseases located in the posterior parts of one or both frontal lobes. A similar state has occasionally attended a frontal lobotomy which has been inadvertently extended too far posteriorly.

The full significance of this extreme lack of impulse to thought and action, so-called abulia in older psychological terminology, cannot be assessed from available data. Nor can we state its frequency as a manifestation of disease of different parts of the cerebral hemispheres for the reason that a suitable index or measure of impulsivity to action and of voluntary attention has not been developed. Nor has the converse of abulia, an uncontrollable uninhibitable impulse to action, the so-called "organic driveness" of Eugene Kahn, been subjected to careful study. Only the extreme degrees of it, manifest in the wild, senseless, uncontrolled, destructive actions of children with brain disease, have even been mentioned in the medical literature; and the morbid anatomy of this condition has yet to be divulged.

VI. Affect and Emotion

Disorders of the affective or emotional life are conceded to be the central abnormality in all the major psychiatric illnesses. Considering their importance, it is surprising that so little attention has been given to the nervous derangements upon which the emotional states depend. But this neglect is probably due to

the fact that contemporary psychiatry has concerned itself more with expected emotional reactions to the thought content of mind and its psychological origins in past experience than with general biological processes.

At the present time it is impossible to do more than summarize a few of the changes in emotional life that have been observed during the course of established diseases of the human nervous system.

To turn directly to the neurology of emotion it should be noted that the term implies two conditions—"a way of feeling and a way of acting" (Papez). The former denotes the subjective experience, the latter, the outward expression. A complete analysis would require consideration of the stimulus situations (their nature, threshold, etc.), the adequacy, appropriateness and duration of the emotional experience or feeling and the form and duration of the emotional response.

Clinical study of diseases of the brain has revealed more information concerning the expression of emotion than of the subjective experience itself, which is regrettable. Numerous patients come to the attention of the medical profession in which disease of the brain has rendered them incapable of controlling their emotions or of expressing them in the usual manner. A notable example of the former is pathological laughter or crying. Here the slightest stimulus will cause uncontrollable laughter or crying which may persist for minutes. One of our patients with amyotrophic lateral sclerosis was so convulsed with laughter whenever he saw the house physician, who had told him a joke at the time of their first meeting, that it was necessary to transfer him to the care of another physician. And another patient with "lacunar" vascular disease of the brain wept disconsolately for minutes every time he attempted to relate the history of his illness. Lesser degrees of this phenomenon present themselves as excessive emotional lability or weakness of the mechanism for the normal inhibition of the emotional reactions, e.g. weeping upon hearing the national anthem or upon greeting a friend.

The question naturally arises as to whether these emotional outbursts are accompanied by the appropriate, subjective emotional experience or are pure sham. The stimuli themselves are usually appropriate for the excitation of the emotional reaction though one cannot always be certain on this point. Merely speaking to the patient may initiate the emotional response; or, as in the report of Giannuli (cited by Wilson) the patient was forced to keep his eyes glued to the ground because if he raised them to meet anyone's gaze he would immediately be seized by laughter. The stimulus may be one which for a normal person would be relatively ineffective. Further, the reaction, once initiated, cannot be checked. Brissaud's patient, upon being told by a lady that her little dog was dead, adopted a mournful countenance which was followed by "tears, tears by sobs and sobs by a Rabelaisian effect on the sphincters". Concerning the subjective experience it does not always correspond to the outward emotional display. The patient may laugh against his will, even when his mood is one of sorrow or annoyance. Brissaud made the amusing observation of a patient with marked pathological crying in bed next a patient with pathological laughter. The latter would roar with laughter at the weeping of the former and occasionally it would cause the one who was crying to begin to laugh while retaining some of the facial expressions of weeping. The emotional display itself is unquestionably genuine though sometimes not well differentiated.

The best known lesions in these cases of pathological emotionality are in the corticobulbar tracts, which would suggest a release-effect on the emotional mechanisms. The latter are believed to extend from the frontal lobes through the hypothalamus to the autonomic nervous system and the facial-respiratory centers in the lower brain stem. The anatomical studies of these central regulatory arrangements by Bard and his associates indicate that lesions of the limbic portions of the macaque and cat are the cortical areas which have a pronounced effect on emotional reactions. Papez from purely anatomical studies of the

human brain, but doubtless influenced by animal experiments, postulated the existence of a complicated nervous arrangement involving the inferior orbital, cingulate and insular parts of the cerebral cortex, the amygdaloid nuclei, hippocampi, fornical systems and hypothalamus with their various connections as the mechanism for emotion. The details of this neuronal system and its physiology are being studied by many medical scientists at the present time but our understanding of it is far from complete.

The anatomy of persistent nervous syndromes dominated by uncontrollable anxiety and worry has not been investigated systematically in patients with focal brain lesions. So far the most impressive fact to emerge has been the remarkable loss of these symptoms in diseases which damage the inferior parts of the frontal lobes and the fronto-thalamic and thalamo-frontal pathways through the anterior limb of the internal capsule (Freeman and Watts). One may speculate that this fronto-thalamic neuronal system may be the one which is liberated in pathological laughter and crying.

The systematic study of the feelings and emotions in patients with brain disease, of the altered reactions of these patients to drugs such as chlorpromazine, reserpine, mescaline and lysergic acid which are known to inhibit or facilitate emotionality, and of the morbid anatomy of the lesions which underlie these states is almost certain to yield important insights into the major symptoms of psychiatric disease. Already the anatomical studies of lobotomized brains by Yakovlev have provided us with a new conception of the general plan of the nervous system and particularly of the cerebral cortex. Reference is made here to his major division of the brain into the *entopallium*, which includes all the central matrix of the brain stem and spinal cord, the *mesopallium*, which now extends to include all of the limbic system as well as the insular and sensori-motor cortex, and the *ectopallium*, which comprises the association areas of the cortex. This is a welcome substitute for the archaic lobar anatomy.

A final case illustrates the tranquilizing effect of an orbital frontal lesion, changing the whole emotional pattern of a previously tense, sensitive, energetic woman.

Conclusion: From these remarks it should be evident that there is great need of further clinico-pathologic study of well established, stable, focal lesions of the brain. Definition of clinical phenomena, their accurate measurement and complete and systematic studies of the anatomy of the nervous system, all are sorely needed. The careful observation of the action of drugs which affect the nervous system in these patients with focal brain disease is another worthy scientific undertaking and could form the basis of neuropharmacology. Medical neurology will be enriched by studies of these types and should attain a degree of precision never before reached. I trust that some future orator on this celebrated occasion may be able to speak with more authority on these matters.

Chronic Bronchitis and Emphysema[1]

By RONALD CHRISTIE, M.D., SC.D.[2]

I DO NOT KNOW the incidence of chronic bronchitis in Philadelphia but I strongly suspect that it is very much lower than in the foggy, smoke-laden atmosphere which I used to enjoy in England before returning to Montreal. Surveys in the industrial areas of England have indicated that more than 30% of men over the age of fifty are suffering from chronic bronchitis and what is meant by this diagnosis is chronic cough, with expectoration, which is persistent year in and year out and which occasionally becomes purulent, particularly after respiratory infections. Obviously, the first question which should be asked is whether chronic cough of this severity has any clinical significance. In America, "Chronic Bronchitis" has been in disfavour as a diagnostic term and only recently has it been realized that this is a well defined entity which, although not as common in this continent as in certain parts of Europe, is nevertheless an important disease which can lead to disastrous complications.

In England there is a register of disabled persons and this has shown that chronic bronchitis is responsible for more industrial disablement than any other single disease. In some industrial areas more than one third of all patients admitted to hospital for heart failure are in fact suffering from pulmonary heart failure or cor pulmonale secondary to chronic bronchitis and emphysema which is a very much higher incidence than in this country.

In its early stages, chronic bronchitis may only amount to an inconvenience, but it is obviously an important disease and first I will say a word about its cause and the factors influencing its distribution.

[1] Nathan Lewis Hatfield Lecture XLIII, College of Physicians of Philadelphia, 7 January 1959.

[2] Physician-in-Chief, Director of the University Clinic, Royal Victoria Hospital; Chairman, Department of Medicine, McGill University, Montreal 2, P. Q.

It is very much more common in men than in women which is all the more remarkable since it has been shown that the incidence of acute bronchitis is the same in the two sexes. It is said to be more common among the lower social classes but occupation has been shown to be a factor only in dusty industries such as coal mining and cotton spinning.

Climate is undoubtedly an important factor. Its incidence is probably highest in the damp and foggy climate which the English enjoy in their industrial areas and the influence of fog or smog itself is beyond dispute.

Another factor which has been suggested is cigarette smoking but this is difficult to evaluate since a fair proportion of chronic bronchitics give up the habit because they have learnt from personal experience that smoking makes their cough worse. Although the incidence of smoking among severe chronic bronchitics may for this reason be low, there is good evidence that in the early stages of the disease the incidence of smoking is well above the average. I think the only conclusion that can be come to is that smoking is a factor but it is certainly only one of several factors.

Another important factor is respiratory infection and the available information points to several interesting conclusions. Contrary to what is usually believed, the respiratory tract below the larynx is in health not normally infected but is usually practically sterile which says a great deal for the cleansing mechanism of the bronchi. The mouth of course, is swarming with bacteria and it has been shown that in chronic bronchitis the same organisms are found in the lower respiratory tract as normally inhabit the mouth and naso-pharynx. Further, if this infection is cleared by means of antibiotics, recolonization of the respiratory tract with mouth organisms usually occurs when treatment is stopped. These findings sug-

gest that in fully developed chronic bronchitis infection plays a secondary role, the primary fault being the destruction of the defence mechanism due presumably to the loss of cilia and damage to other elements of the mucous membrane. But it is also true that no one who has followed the clinical course of this disease can doubt the manner in which acute respiratory infections, ranging from the simplest cold to the full blown case of pneumonia, can lead to exacerbations of chronic bronchitis, particularly in the winter. Presumably these acute attacks promote destruction of the defence mechanism of the respiratory tract and add further damage to that already present in the bronchitic patient.

The nature of this damage is now fairly well understood. The principle feature is hypertrophy of the mucous secreting elements and excess of mucous in the air passages. In about 50 per cent of cases hypertrophy and dilatation of the mucous glands is sufficiently marked to be demonstrable by x-ray. Diverticuli, which are in fact dilatations of the mucous glands, are usually most prominent on the inferior surfaces of the bronchi particularly those of the upper lobes but even down to the level of the bronchioles there is hyperplasia of the mucous secreting goblet cells. There is also some oedema of the bronchial wall and evidence of a mild inflammatory reaction. In about two-thirds of patients this is all that is found but in the other third there is also evidence of a chronic purulent infection with purulent sputum. The predominant organism is almost invariably either the pneumococcus or the hemophilus influenzae. The walls of the bronchioles are infiltrated with inflammatory cells and the epithelium may be denuded and replaced by fibrous tissue. Presumably as a sequel to this, there may be an irregular dilatation of the bronchioles giving a beaded appearance or there may be bronchiolar constriction or even occlusion, sometimes associated with bronchiolectasis.

These then are the changes which take place in the bronchi and bronchioles and many of these patients only complain of a productive cough. Others, however, will develop shortness of breath.

Dyspnea on exertion is the first milestone in this disease and it may be due to one of two causes. In some patients it is due entirely to a chronic and insidious form of bronchospasm, so called chronic bronchitic asthma or chronic infective asthma. In these, dyspnea may be worse in the morning and varies in severity from time to time usually with considerable improvement in the summer. Characteristic rhonchi may be heard and when dyspnea is severe the patient himself may be conscious of wheezing. As far as is known, there is nothing irreversible about this stage; considerable relief can often be obtained by antispasmodics, breathing exercises, and other procedures.

At the other extreme, there is a very much smaller group in which shortness of breath is entirely due to emphysema. In these patients there is little or no evidence of spasm and the dyspnea does not vary from time to time but is slowly progressive. The essential lesion in emphysema is dilatation of the alveoli the walls of which may rupture or disappear. Only recently has the nature and distribution of this destructive lesion been studied in detail and it is now clear that there are two types, the centrilobulor and the diffuse. The etiological significance of this differentiation is, however, obscure. Just as important as this destruction of air sacs are the changes in the blood vessels. Many of the capillaries in the emphysematous areas are obliterated. When reduction in the pulmonary vascular bed becomes sufficiently severe pulmonary hypertension may develop with hypertrophy of the right ventricle and finally heart failure. It is not surprising that changes which are so extensive and so widespread should lead to impairment of function.

Just to make things more complicated the majority of patients with emphysema also have chronic bronchitis with some degree of bronchospasm and under these circumstances it is clearly of prognostic and therapeutic importance to know whether the dyspnea is mainly due to bronchospasm and swelling of the mucosa which is treatable and reversible or is due

to emphysema which is progressive and irreversible. It is this differentiation of dyspnea due to bronchospasm, from dyspnea due to emphysema which is being intensively investigated by several groups of workers both in this country and overseas with some measure of success.

The position of emphysema in clinical medicine is a curious one. The pathologists find no difficulty in diagnosing this disease and in the medical textbooks the description of the physical signs and symptoms of emphysema appears to be perfectly clear cut. Yet, most experienced clinicians find great difficulty in diagnosing emphysema except in its advanced stages when the patient may be incapacitated by dyspnea. Richard Cabot of Boston was, I think, the first to point out that many of those who are diagnosed as emphysema on the post mortem table are never recognized during life. He also showed that many of those diagnosed clinically as emphysema on the basis of a barrel-shaped chest and other physical signs showed no evidence of the disease at post mortem. This has been confirmed by others and there is no doubt that Cabot was right.

It has been suggested that the radiological picture is more reliable in the diagnosis of emphysema but this has been shown to be a fallacy, at least with ordinary techniques. Only about 80% of patients with fully developed emphysema show radiological evidence of the disease. It is also true that the elderly not infrequently show "radiological evidence" of emphysema when there is no clinical reason to suspect the disease. The use of tomography in the diagnosis of emphysema is still in the experimental stage but it appears likely that this may provide a more reliable approach.

On clinical grounds, we can only diagnose emphysema with confidence in its advanced stages when the patient is incapacitated by dyspnea. Usually we are unable to diagnose emphysema in its early stages, a position which is far from satisfactory since it excludes diagnosis at a stage when both prognosis and treatment might be of considerable value. This predicament is by no means unique in medicine. There are many diseases in which it is difficult or impossible to make an early diagnosis. A standard approach is to discover how function is impaired in this disease in the hope that function tests may reveal the early stages. In emphysema we have an ideal disease for this approach. Respiratory function in fully developed emphysema is grossly impaired and during the past ten or fifteen years we have learned a great deal about its mechanism.

First, the patient with emphysema has to make a greater effort than normal in order to get the air in and out of his lungs. When he exercises, he increases his ventilation in the normal way but the amount of work his respiratory muscles have to do in order to shift this moderate amount of air is vastly increased. It may be increased 5, 6 or even 7 fold and it is for this reason that the patient with emphysema becomes prematurely short of breath when he exercises. This increase in the work of breathing can be measured directly or it can be measured indirectly by the timed vital capacity or the maximum breathing capacity which is reduced. Unfortunately these tests of function are of no value in differentiating the chronic bronchitic who is short of breath from the patient with emphysema since the same changes are found in both.

Secondly, the efficiency of ventilation is impaired. The flimsy and avascular emphysematous areas are over ventilated while the healthier areas deeper in the lung are under ventilated. In other words much of the inspired air is wasted in ventilating the functionless emphysematous areas at the expense of the vascular areas through which the pulmonary blood is actually flowing. One facet of this maladjustment between ventilation and perfusion of the lung can be measured and this is the efficiency with which the alveoli are ventilated by the inspired air. By modern techniques this so called mixing efficiency can be measured with considerable accuracy, but it is also reduced in patients with chronic bronchitis and bronchospasm, so is of little value in the differential diagnosis of emphysema.

Thirdly, there are changes in the lung vol-

ume and its subdivision. The vital capacity is of course reduced as it is in most conditions which affect the thorax. More specific is the increase in lung volume which usually occurs. If the functional residual capacity is more than 4 litres the patient almost certainly has emphysema. However about 50% of patients with emphysema have a functional residual capacity which is less than 4 litres and in these the test is of but little diagnostic value.

Fourthly, there is a reduction in the pulmonary vascular bed and it is this that finally kills the patient by producing cor pulmonale. The extent of this vascular obliteration is indicated by measurements of the diffusing capacity which reflects the ability of the lung to transfer oxygen or carbon monoxide from the alveoli to the pulmonary capillary blood. Unfortunately it is difficult to assess the diffusing capacity in a system so grossly uneven as the emphysematous lung and there is considerable controversy as to the precise meaning of these measurements in emphysema. Nevertheless it appears to be true that the reduction in the diffusing capacity consistently found by steady state techniques indicates that the effective surface area of the vascular bed being ventilated is much reduced. Further this group of tests offer the only contemporary promise of providing an indication of the state of the lung parenchyma, and hence of being of value in the early diagnosis of emphysema. Retention of carbon dioxide in the blood and a fall in the oxygen saturation of the arterial blood are characteristic of the later stages of the disease but by the time these changes have occurred the diagnosis is usually obvious on clinical grounds. Most are now agreed that the diffusing capacity is of the greatest significance in the early recognition of emphysema.

I will say no more about respiratory function tests. They are of considerable value in both diagnosis and prognosis but they are available to few. The majority of practitioners will have to depend on their clinical senses to differentiate dyspnea due to bronchospasm from dyspnea due to emphysema. In favour of bronchospasm, as already mentioned, would be a history of wheezing and of shortness of breath on exertion varying in severity from time to time and almost always worse in winter. The most significant finding will be the characteristic rhonchi of bronchospasm and these should be listened for both at rest and after exercise. In favour of emphysema would be a history of dyspnoea on exertion progressing insidiously and without remission. On examination the physical signs of emphysema will almost always be found but it should not be forgotten that these signs are sometimes absent in emphysema and are sometimes present in elderly individuals who are not suffering from emphysema. The same is true of the so called radiological characteristics.

When these various points are added up however, it is usually possible to assess with reasonable accuracy the relative importance of bronchospasm and emphysema in producing the dyspnea of which the patient complains, an assessment which is of considerable importance in both prognosis and treatment.

If breathlessness on exertion is the first mile stone in the course of chronic bronchitis, pulmonary heart failure is the second and again very little evidence is available on the incidence of this final complication even after dyspnea and emphysema have developed.

In my own clinic I have followed over a period of five years 57 patients who when first seen were suffering from chronic bronchitis and emphysema with no evidence of heart failure. From the insurance tables four or five of these patients should have died during this period. In actual fact 20 of them died, 16 of cor pulmonale and another three have developed cor pulmonale and are still alive, making a total of 19 out of 57 patients who have developed pulmonary heart failure or one-third of the whole group over a period of five years. Bronchopneumonia was usually a factor in precipitating heart failure but it was never the cause of death, due, of course, to the use of antibiotics. In the old days most of these patients died of bronchopneumonia before developing heart failure and it is the fact that they now survive these acute respiratory infections that has lead

to the apparent increase in the incidence of cor pulmonale.

Lastly we come to treatment.—The treatment of patients with chronic bronchitis who are short of breath.—In my own clinic this is based on anti-spasmodics and breathing exercises with antibiotics in reserve for acute exacerbations. Many other procedures such as pneumoperitoneum, sympathectomy and various forms of positive pressure breathing have also been suggested but until some convincing evidence of their value is forthcoming, I believe we should continue to rely on more conservative forms of treatment.

The insidious progress of chronic bronchitis is at least partly dependent upon secondary infection which is usually due to the pneumococcus of the hemophilus influenzae and a promising line of treatment might therefore appear to be the use of antibiotics. Several antibiotics inhibit both the pneumococcus and the hemophilus influenzae but the latter is more difficult to control and probably for this reason chloramphenicol has been found to be the most efficient. Unfortunately the prolonged administration of chloramphenicol is dangerous so we have to turn to the terramycin or aureomycin or tetracycline group. A full course of either of these for a week or 10 days will often convert a purulent sputum into a mucoid sputum and this can sometimes be held by a maintenance dose of as little as half of a gram twice a day which seldom gives rise to toxic symptoms.

The place of antibiotics in the treatment of chronic bronchitis is yet to be established but in my opinion they should be given a trial if the sputum is purulent. On the whole I am rather against the use of a maintenance dose because of the danger of the development of toxic symptoms or of resistant organisms. If a maintenance dose seems indicated, it is better to use one of the newer sulpha drugs in small doses. Antibiotics should usually be reserved for the acute exacerbations which so often supervene.

Most of these patients have bronchospasm in varying degree and this should of course be treated. The number of anti-spasmodic drugs that can be used increases every year and all I need to say is that ephedrine and aminophyllin are two I always try but it is important to ring the changes. Although there is no good evidence that the bronchospasm is in any way related to allergy, many of these patients attend allergy clinics with a diagnosis of chronic infective asthma or chronic bronchitic asthma. Certainly desensitization plays no part in the treatment of this disease but a great many of these patients have been given cortisone and good results have been claimed. In a carefully controlled trial in which neither patient nor doctor knew whether or not the patient was receiving cortisone, the results clearly showed that any improvement from cortisone is only transitory. After a few weeks the advantage held by the cortisone treated group disappeared. Since the use of cortisone in the elderly is by no means devoid of risks, it is fair to conclude that cortisone should not be used for the bronchospasm of chronic bronchitis.

Lastly there are procedures which may increase the exercise tolerance of the patient by improving the mechanics of breathing. One is respiratory exercises which are designed to encourage deflation of the lung and to train the patient to breathe more slowly and deeply. Another is the use of an abdominal belt which raises the intra-abdominal pressure and thus improves the efficiency of the diaphragm by raising it.

It has been said that chronic bronchitics are a very satisfactory group to deal with. If the patient feels better he gives full credit to the treatment he is receiving, while if he feels worse, he quite reasonably blames the weather. This may be true but it is certainly also true that the various procedures I have mentioned can often give considerable symptomatic relief. Whether or not they influence the course of the disease has yet to be shown.

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Functional Disorders of the Digestive Tract—Philosophic and Nosologic Aspects[1]

By HENRY L. BOCKUS, M.D.[2]

THE primary concern of the physician is the orientation of patient complaints in order to choose a therapeutic regimen designed to achieve amelioration or relief of symptoms and prevention of recurrence. For simplification perhaps one could state that gastrointestinal symptoms may be the result of one of the following mechanisms: a) an alteration of visceral structure, e.g., organic visceral disease; b) a disorder of visceral function (so-called physiological functional disorder); c) a disturbance of the mind; or 4) various combinations of the above.

Medicine is now returning to an older concept of considering all ailments as being psychosomatic or psychovisceral in character, i.e., ordinarily organs or systems do not express themselves as isolated structures, but that complaints are related rather to an interaction of physiological and psychological activity, whether the cause be organic or functional. It is agreed that there is no sharp line of demarcation between health and disease and often between structural change and simple functional or physiological aberration from the expected normal. Nevertheless, it is essential for purposes of clinical understanding, of classification and of nosological orientation to maintain for the present the designation "functional disorders".

In order that functional disorders be brought into proper perspective, it is important for clinicians to keep in mind the history of the sequence of advances in clinical medicine which have brought us to our present understanding of functional disease. Walshe has recently summarized chronologically the historical events upon which our present knowledge of clinical medicine rests. I have drawn upon his interesting account for the brief recitation of these events. Without some knowledge of the cornerstones and solid foundations which culminated in our present structure known as "clinical medicine", one cannot fully appreciate the significance of the recent advances being made in our knowledge of functional disorders. The significant cornerstone which ushered in the renaissance of clinical medicine in the seventeenth century was laid by the great pioneer clinician, Sydenham, and the eminent physiologist, Harvey. Sydenham began the study of ill persons by accurately describing symptoms and signs; he developed a scientific discipline in clinical medicine; he was the founder of nosology. It was not until the beginning of the nineteenth century, as a result of the work of Bichat and Corvisart in France, that the first important impetus was given to another solid foundation for the emergence of clinical medicine. I refer to the systematic development of pathologic anatomy and clinicopathologic methods. Then came further improvement in clinical techniques beyond that of simple inquiry, observation and classification which had been introduced by Sydenham, namely, the utilization of objective methods of examination. The use of the stethoscope by Laennec was one of the first important steps in the development of objective methods of examination. This aforementioned triad, i.e., symptom analysis, pathologic examination and objective clinical examination, forms the basis of good clinical practice today.

Now the stage was set for inquiry into the cause of morbid processes in the body. In the middle of the nineteenth century, "physiologic

[1] Benjamin Musser Lecture VII, College of Physicians of Philadelphia, 4 March 1959.

[2] Professor and Chairman, Department of Medicine, Graduate School of Medicine, University of Pennsylvania, Philadelphia 4, Pa.

medicine" came to the fore. Magendie, Henle, Virchow and others began to interpret the signs and symptoms of disease in terms of function. Experimental methods in medicine became more and more important. Soon bacteriology was born (Pasteur) to be followed rapidly by advances in our knowledge of clinical medicine, the result of research in chemistry and physics, and the introduction of roentgen techniques and endoscopic methods. The utilization of these laboratory procedures, valuable as they are, was not without a baneful effect. Clinical discipline and the art of medicine suffered somewhat as the newer methods of precision attracted more of the embryo physicians' attention. This became manifest in observing the results of training of our young medical graduates. Fortunately, the pendulum is beginning to swing again toward a proper balance between truly clinical medicine and laboratory and experimental methods in medical training. It has become obvious that clinical medicine must remain basically clinical—the human approach to human problems. This philosophy has been aided greatly by a return to the psychovisceral concept of the body and mind developing together, and an appreciation of the clinical significance of the relation of one to the other—the concept of the need for consideration always of the "whole" (both mind and body). Certainly this concept is essential to the understanding of the so-called functional disorders.

The clinician is accustomed to the use of the term "functional disorder" to describe symptom configurations, not the result of demonstrable structural visceral change, but often occurring in association with disordered physiological activity. It is recognized that medicine is on the threshold of great advances in our understanding of this whole area of disturbed visceral function in relation to symptom configurations and to physiological and structural visceral change. Methods of precision in orientation and diagnosis are beginning to emerge. The application of this newer knowledge is best achieved, not by the pure scientist, the psychiatrist or the experimentalist, but by the coordination of their efforts by the physiologically minded organicist. The correlation of these additions to our knowledge of function in relation to patient behavior patterns should continue to remain in the hands of the physician who is steeped in clinical traditions and in clinical discipline. Such background and training are essential to the over all appraisal of disturbed physiology in relation to symptoms and signs. With such training there is less likelihood of errors in the understanding of the interrelationships of symptom patterns, functional disorders, physiological derangement and organic disease.

Structural and Functional Interrelationships: —In the second Croonian lecture for 1950, Clark-Kennedy clearly summarized a most acceptable philosophy dealing with psychovisceral interrelationships. A quote from Mohr is pertinent: "There is no such thing as a purely psychic or a purely physical illness, but only a living event taking place in a living organism, which is itself alive only by virtue of the fact that, in it, psychic and somatic are united in a unity".

Fully recognizing the aforementioned wholeness (body and mind) in expression of altered function, practically and at the bedside, the first step must be the carrying out of those objective studies that should rule out structural or organic disease. A brief outline for practical orientation of the interrelationships between the organic and the functional may be considered at this time. There are four mechanisms which may be concerned.

Usually, organic disease gives notice of its presence initially as a result of disturbed physiology—motor, secretory or vascular—because of stimuli arising in or near the disease process. The resultant subjective manifestations of disturbed function may not differ in any particular way from complaints which are purely of functional origin. This is true since the physiologic disturbance of the part may be identical, whether the stimulus is local from organic disease, or whether it arises purely as a result of disturbed innervation. Certainly, functional colonospasm may cause symptoms identical

with sigmoidal diverticulitis or beginning obstruction from carcinoma of the sigmoid.

The symptom configuration in organic disease is rendered more complex by the frequency with which anxiety and emotional tension is created by a knowledge of the presence of the organic lesion. As a result of this anxiety, secondary physiological disturbances give rise to additional symptoms, i.e., a so-called functional overlay, often confusing the symptom pattern produced by the organic disease. Innumerable examples may be given: a) the overlay of emotional diarrhea, when the patient with ulcerative colitis is unduly disturbed emotionally; b) the creation of high epigastric and low substernal discomfort as a result of the large magenblase from tensionally induced aerophagia from worry over heart disease; c) the lower abdominal discomfort, the result of a functional colonospasm which occurs so often in association with a recurrence of peptic ulcer.

The pain stimulus itself, if of great intensity, may cause sufficient disturbance of physiologic function to give rise to additional or secondary symptoms. It should be remembered that severe pain may affect cardiac function if the heart is diseased (Gold) or may have a deleterious effect on renal function (Wolfe, Jones). Causalgia is a good example of a painful disorder causing widespread physiologic disturbances and secondary pains.

Finally, in this discussion of structural-functional interrelationships, one is confronted with the question of when, if ever, primary emotional tension may lead to organic disease. Nathaniel Hawthorne had this in mind when in the "Scarlet Letter" it was stated: "A bodily disease which we often think of as a thing apart and separate may after all be but a symptom of an illness in the spiritual part of our nature". Ample proof will be given of the effect of emotions on physiologic function and of the mechanisms of such action. Furthermore, we do know that hypothalamic stimulation and emotional shock can give rise to superficial organic lesions, like acute ulcer of the stomach or duodenum. Chronic peptic ulcer and ulcerative colitis are diseases which many believe may be the result of emotional tension. Without denying this possibility, it must be stated that proof is still lacking. I think it is of interest in this connection to mention that ulcerative colitis rarely occurs as a result of a continuous or recurrent motor disorder of the colon of emotional origin, i.e., as an aftermath of the so-called irritable colon of mucous colitis. Furthermore, peptic ulcer disease is not commonly preceded by symptoms or signs to suggest a long-standing physiologic motor disorder of the pyloroduodenal region. Obviously, the lack of antecedent physiologic unrest (presumably of emotional origin) does not preclude the possibility that these two severe organic lesions may not, in fact, be of emotional origin. It is merely emphasized that proof is lacking.

THE MECHANISM OF FUNCTIONAL DISORDERS

At the onset, it should be realized that the physiologic disorders common to the gastrointestinal tract may be dependent upon influences other than disturbance of innervation of central or emotional origin. Chemical, hormonal, nutritional, allergic and endocrinal influences, often acting via the vegetative nervous system, are also concerned with the complex regulation of organ function. The interplay of these factors is very complex and not well understood.

Other than primary neurogenic mechanisms, the endocrinal apparatus is probably most often responsible for physiological disorders of the alimentary tract. The pituitary-adrenal axis has received most attention in this regard. Pituitary hormones are released through hypothalamic stimulation. Adrenal hormones secreted in response to the discharge of hormones from the pituitary certainly exert a striking effect on gastric secretion and function (Gray et al.), so that the adrenal steroids may very well be an important mechanism in the transmission of the effects of emotional stress to the digestive tract. The hypothalamus is, of course, the coordinating center, thus accounting for the interplay of humeral and nervous mechanisms responsible for coordinated physiologic function. Another common example of

the role of endocrinal function in physiologic behavior patterns is that of so-called premenstrual tension. In many females it is only during this premenstrual epoch that the symptoms of motor dysfunction of the alimentary tract occur. A good example is that of the irritable colon syndrome, which perhaps is even more common than migraine or headache as a premenstrual symptom. The deranged endocrine balance occurring in association with hyperthyroidism often induces diarrhea as a result of secondary gastrointestinal hyperperistalsis. Innumerable examples could be given of so-called functional aberrations of digestive function which occur in association with endocrinal disorders.

Regardless of the actual modus operandi, most functional derangements of the alimentary tract can be attributed to the influence of emotional tension. The oft-repeated phrase, "the abdomen is the sounding board of the emotions", will bear further reiteration. No experienced gastrointestinal internist can deny the common occurrences of abdominal symptoms of emotional origin. Nevertheless, there remains a wide hiatus between the extent of existing knowledge in this field and its diffuse dissemination. This applies particularly to prevailing ignorance concerning the clinical characteristics of many functional disorders. Many of these are just as susceptible to concise description and classification as certain clinical entities of a structural nature.

The *autonomic nervous system* is intimately concerned with the regulation of all activity of the digestive tube and consequently the clinician must be familiar with its manner of activity in order to have an understanding of disordered function in relation to patient complaints and diseases. The review of Thomas nicely summarized the present state of our knowledge of the autonomic nervous system in relation to gastroenterologic function. Mention is made of the fading concept of the parasympathetics (vagus) and sympathetics as antagonistic influences which must be in good equilibrium in order that organ function be nicely coordinated. Increasing understanding of the neurohormones has been largely responsible for modification of concepts of autonomic nervous system function. Impulses over the autonomic system of nerves exert their effect by release of specific chemical substances. It is now known that all of the preganglionic and most of the parasympathetic postganglionic fibers release acetylcholine at their terminals, whereas most of the postganglionic sympathetic fibers release sympathin, now thought to be arterenal, and also epinephrine. Thus it has become customary to refer to cholinergic fibers or cholinergic effect and adrenergic fibers or adrenergic effect, rather than parasympathetic and sympathetic influence. Furthermore, the concept of "parasympathetic, versus sympathetic" is no longer tenable since some postganglionic sympathetic fibers are cholinergic and some parasympathetic fibers are probably adrenergic.

It should be remembered that digestive functions may continue in the absence of extrinsic innervation of splanchnics and parasympathetic fibers by virtue of reflexes mediated through local nerve plexi. However, good digestive function is best accomplished when impulses do arrive from higher centers over the cholinergic and adrenergic fibers. Although, the thoracolumbar sympathetic nerves are thought to exert only a minor influence in regulation of gastrointestinal function, profound stimulation of these fibers may result in decrease in functional activity. The parasympathetic system plays a more important role in regulation of functional activity. The cutting of the vagus nerves may result in a cessation of gastric peristalsis for weeks or months, and a reduction in gastric acidity. The effect of vagotomy on intestinal motor and glandular function is not so striking. Here the autonomic plexi evidently require less central guidance. Thomas well expresses the influence of the vagus as a means of transmission of central impulses, reinforcing the effect of reflexes mediated through the local nerve plexi.

By turning our attention to the *hypothalamus*, the mechanism of influence of the emotions on visceral function, becomes clear. By

virtue of nuclei and intercommunicating fibers the hypothalamus is truly the center of coordination of emotional experiences with the sympathetic nervous system and visceral function. McDonald aptly called the hypothalamus the "head ganglion" of the autonomic nervous system. Connections between the cerebral cortex and the hypothalamus via the thalamus are well known. The areas of the cortex concerned with emotional experience have ready access to the hypothalamus (Murphey and Gellhorn), where connections with centers for sympathetic visceral control are made, thus completing the circuit responsible for disturbed visceral function of emotional origin.

Of great importance clinically is the possible development of so-called conditioned reflexes concerned with emotional responses (Babkin). Conditioned emotional responses have been repeatedly demonstrated in animals and unquestionably occur in humans. This concept, so important to an understanding of psychovisceral disorders, is succintly expressed by Thomas: "The development of a conditioned reflex is a demonstration of a fundamental law of nervous activity, namely, that once a chain of neurons has been made to function in unison, it comprises a path of low resistance within the central nervous system over which impulses will flow with greater ease the more the pathway is used . . .". Once a stimulus has found its way from one of the peripheral sense organs to one of the viscera by way of the central mechanism for emotional expression, a second (later) stimulus will tend to take the same path. If the stimulus is repeated often enough, the emotional response and the visceral reaction may become permanently associated, and the reaction may occur whenever that particular stimulus is exhibited. Indeed, any circumstances that are regularly associated with the stimulus may by themselves become effective stimuli".

In order to facilitate the understanding of functional disorders it is well to look upon emotions as having two components, psychological and physiological. A common emotion is that of fear aroused by a threat to life because of the innate instinct of self-preservation. The physiologic components comprise reactions giving rise to mobility for action, i.e., running away or fighting it out, and complaints like palpitation, sweating, diarrhea and tachycardia may appear.

Ample *experimental evidence* has been supplied by Wolfe, Almy, Grace and many others in support of the concept of emotional physiological disturbances causing subjective symptoms, i.e., so-called functional disorders. Visceral response to emotional trauma has been observed in suitable subjects with external fistula, with colostomy, ileostomy and gastrostomy stomas, by endoscopic, balloon and roentgen observations of the stomach and low sigmoid. Various disturbances of motility, secretion and blood supply have been noted. Japanese workers (Ikemi, et al.) have recently added support to the concept of emotional tension as a cause of so-called functional disorders utilizing hypnosis; by this means a more specific type of emotion may be created and its effect studied experimentally. Under these circumstances, both balloon and roentgen observations of physiologic visceral behavior were observed in normal and neurotic persons.

Further acceptable proof for the emotional origin of many functional complaints is at hand in the practice of any gastroenterologist. One of the purest examples is that of so-called *functional or emotional diarrhea.*

Character and Classification of Local Physiological Response to Emotional Stimuli:—The most common subjective symptom of a functional disorder is pain or something akin to pain. It is now generally recognized that true visceral pain in the abdomen usually is the result of changes in tension of smooth muscle of the alimentary tract, e.g., spasm (hypertonicity) or distention, and that impulses initiated in this way are carried over afferent visceral fibers accompanying the sympathetics. It has been shown conclusively that stimuli of emotional origin are quite capable of giving rise to sufficient disturbance of motor physiology to set off pain impulses. Of course, there are many conditioning factors, such as strength of stimulus, pain threshold, and concomitant inflammation, which modify the intensity of the com-

plaint. A discussion of these is not essential to the present thesis.

With advances in our knowledge concerning the character of physiologic behavior patterns in relation to emotional change, it becomes increasingly desirable to develop a working classification or formula. One way in which this may be done is on the basis of the nature or character of the disturbed physiology. One might divide physiologic disorders into three types, those characterized by: 1) hyperfunction, 2) hypofunction and 3) mixed types. Pending the accumulation of additional factual data, the following simple outline is offered:

This outline is not given with the idea that it can be used as a fixed classification, but rather as an aid in orientation of functional disorders. It is believed that the physician should try to classify functional disorders based on the nature of the physiologic derangement when at all possible. It is in this way that therapy can be applied more intelligently. The clinician should keep abreast of advances in our knowledge of psychovisceral disorders. This can be best accomplished by attempting to correlate in every instance, the type of physiologic derangement, as determined by objective findings with the existing symptom configuration

1. HYPERFUNCTION

	Physiologic Alteration	Functional Disorder	Symptoms
Motor	1) Hypertonicity (Segmental spasm)	Hypertonic colon	Pain, constipation
		Hypertonic ileum	Pain, cramping
		Pyloroduodenal irritability	Pain, hunger
	2) Hypermotility (general)	Rapid G.I. transit	Emotional diarrhea
	Gastric hyperperistalsis	Rapid stomach emptying	Epigastric distress
	3) Dysrhythmia	So-called cardiospasm	Pain, dysphagia
Secretory	Gastric hypersecretion	Hyperacidity (Duodenal ulcer) (functional gastrosuccorrhea)	Pyrosis, regurgitation or vomiting at times if reflux
	Colonic mucosa hypersecretion	So-called neurogenic mucous colitis	Mucus discharge
Motor and secretory	Both motor and secretory hyperactivity often occur together	Gastric hypermotility and hypersecretion	Epigastric distress
Vascular	Engorgement or congestion	Possible erosion Superficial ulceration	Related to concomitant motor disorder

2. HYPOFUNCTION

	Physiologic Behavior	Functional Disorder	Symptoms
Motor	Hypotonus	Esophageal stasis (achalasia)	Dysphagia
	Muscular flaccidity	Gastric stasis	Epigastric fullness
	Muscular relaxation	Ileal stasis	Anorexia? Abdominal distress
		Colon stasis	Constipation
Secretory	Gastric Hyposecretion	Functional achlorhydria	Nausea (?) Anorexia (?)
Vascular	Ischemia	A concomitant of other disorders	?

3. MIXED FUNCTION

Evidences of hyper and of hypofunction concurrently in different segments of the alimentary tract

and the character of emotional charge which may be held responsible. Schemata like the above seem to be the closest approach to a classification of the types of physiologic disorders which is now possible. Only prolonged observation by well-trained clinicians will determine how clear-cut and well-defined physiologic derangements of emotional origin really are. We cannot be sure how often secretory and motor hyper and hypofunction coexist or how often one segment of the tract is overly active while another is underfunctioning as a result of the same emotional stimulus.

Relation of Emotional Charge to Type of Physiologic Disorder:—One may well ask, do specific emotions tend to initiate impulses which consistently cause uniform physiologic or somatic disturbance in the same person or in all persons? Study of conditioned reflexes previously mentioned (Murphey and Gellhorn; Babkin) support in some measure such a concept. This linkage of the emotional stimulus and the visceral response is the result of the activation of the same neuronal chain and the emergence of conditioned reflexes, which may well result in identical visceral reactions if the same stimulus is subsequently applied. Clinical observations support this concept. However, much remains to be done before emotional trends with their complexities can be closely linked to constantly recurring visceral behavior patterns. In many of the reports on experimental human subjects, one is impressed with the very superficial nature of analysis or classification of the emotional content or charge alleged to be responsible for the visceral reaction. Psychiatry is in need of more factual physiologic knowledge before the precise correlation of specific emotions with consistent visceral behavior patterns is possible. However, great advances in our knowledge of these interrelationships have been made. Practically, one may generalize concerning some classical psychological attitudes. Certainly, the "fighting" attitude, an emotional reaction which is characterized often by such modes as hostility, resentment and aggressiveness, has been found to be quite often associated with visceral functional disorders characterized by spasm, pain and hypersecretion. The opposite psychological reaction, commonly referred to as the "running away" attitude, the attitude of "giving up" and the emotions associated with frustration, sadness and grief are more likely to be linked to visceral hypofunctional responses. Symptoms of anorexia, nausea and constipation are common. These are very crude examples of linkages between emotional charges and visceral function, but they do represent a beginning in this important phase of clinical medicine.

The factors responsible for the *site* of the physiological visceral disorder in terms of emotional stimulus remain to be determined. Why is the esophagus affected in some (cardiospasm), the pylorus in others (pseudo-ulcer syndrome), the small intestine in others (emotional diarrhea) and the colon in still others (irritable colon)? Why do some persons persist in having a monosymptomatic disorder, e.g., pyrosis, while others experience at different times functional derangement of all segments, perhaps one after another? Phylogenetic factors, genetic, familial and early environmental influences are unquestionably concerned. Once a neuron circuit connecting the cerebrum with a viscus is used, the laws governing conditioned reflexes undoubtedly apply. The character and strength of the emotional stimulus play some part, perhaps in the extent or degree of disturbance of visceral function, just as strength of pain stimulus determines the intensity and degree of radiation of subjective pain. Multiple sites of visceral dysfunction perhaps means only a greater complexity and number of emotional charges—a greater number of pathways or circuits of least resistance or a greater number of conditioned reflexes. Time may well solve the nuances of multiple concomitant and of sequential types of functional disorders.

Deep-seated mental disorders, particularly the *organic psychoses*, are in need of further evaluation in relation to frequency and type of occurrence of functional visceral disorders. Margolis and his associates touch on this fundamental relationship in reporting the findings

of dissociation of gastric function in relation to conscious and unconscious conflict states in a fistulous human subject. It is my impression that functional derangements of the alimentary tract are either less common in association with the psychoses than with the psychoneuroses or they have been more frequently overlooked in psychotic persons. The experienced clinician may become suspicious of a psychotic reaction, often schizophrenic in character, with a constant complaint of offensive breath or body odor or intestinal odors—symptoms which in reality cannot be substantiated by objective observation. Yaskin has stressed and frequently I have confirmed the occurrence of a constant bitter taste in the mouth in association with depression. Constipation and bad breath are other rather common complaints of the depressed person. However, too little is known and further studies are needed concerning the types of physiological visceral disorders in association with the psychoses.

The Future Orientation of Functional Disorders:—It is obvious that we are on the threshold of a better understanding and more concise orientation of the so-called functional disorders. Advances have been the result of increased interest on the part of physiologists, advances in psychiatric techniques and their application to non-organic physiological disorders. Perhaps of even greater aid has been the development of a group of younger physicians basically trained in clinical disciplines, with interest and training in psychovisceral research as well. I am confident that advances in our knowledge in this broad field of psychovisceral disorders will be steady and moderately rapid. Furthermore, absolute experimental proof of the important role of emotional tension in the pathogenesis of certain visceral diseases may be forthcoming. The possibilities for worthwhile research in these areas are limited only by subject interest and manpower. More rapid advances will occur if collaborative effort is more often possible. I refer to combined studies by teams composed of a seasoned clinician, a physiologist, a psychiatrist, a radiologist and an experimental surgeon. It is hoped that soon functional psychovisceral affections will be amenable to orientation and classification, which will be as satisfactory as the present pathological classifications of organic disease.

A PLATFORM FOR THE CLINICIAN: CLINICAL ORIENTATION

For the diagnosis and care of patients suspected of having a functional disorder, I submit the following formula as a procedural outline which may prove helpful.

1) *Critical Analysis of Subjective Complaints:*—This should result in the establishment of an impression of the type and site of disturbed physiology which in turn determines for the clinician the objective studies required and the order in which they should be performed.

2) *Objective Examinations:*—Such studies intelligently selected must not be neglected and certainly should not be abused. Two purposes are served. First of all, organic disease is excluded as the cause of symptoms. Equally important, the exclusion of carcinoma or other serious visceral disease serves the purpose of effective assurance of the patient in order to dissipate existing anxiety. Second, in the absence of structural disease, the objective examinations may serve to define clearly the character, site and extent of the functional derangement. Since most functional disorders are characterized by abnormalities in motor function, roentgen study is of greatest help.

3) *Appraisal of Personality and Emotions:*—In taking the history an appraisal of the emotional characteristics is ever in mind. At this time, relationships are sought between subjective complaints and emotional aberrations of any type. Environmental influences are carefully appraised. Habit patterns are recorded, as a measure of personality behavior trends and of degrees of tension. Eventually, an effort is made to classify the personality type as well as the character of emotional tension (fear, hostility, anger, frustration, etc.). One decides first of all whether the diagnosis of psychoneurosis is justified and, if so, obviously, the type is designated as a part of the diagnosis.

From the standpoint of personality type the simple classification recommended by Yaskin is suggested: 1) average normal; 2) neurotic (hysterical, hypochondriacal, hypersensitive or compulsive-obsessive); 3) syntonic (cycloid, extroverted); 4) schizoid (shut-in, introverted); 5) paranoid; 6) rigid; 7) constitutional psychopathic; and 8) epileptic. If a neurosis is present, it is classified. The more common types associated with functional gastrointestinal disorders include anxiety neurosis, conversion hysteria, anxiety hysteria and compulsive-obsessive reaction. In many instances, an actual psychoneurosis is not present. Rather the simple appellation of emotional tension and its character will be applied and the reasons for this constitute a most important facet of the diagnosis. One must also keep in mind a phenomenon closely allied with emotion, namely mood. Riggs likens mood to the tides with their periodic change. Floodtide is compared with exultation and ebbtide with dejection. Tidal swings in feeling states are universal. Individuals differ as to their depth and frequency. These modal variants may also determine changes in physiologic behavior patterns in the alimentary tract and need to be borne in mind. In the most extreme form of modal change, an actual psychosis is present, namely the manic depressive psychosis.

4) *The Complete Diagnosis:*—The diagnosis of a functional disorder should be concise. It ought to comprise first a precise description of the type of physiological disorder, e.g., aerophagy (magenblase syndrome) or functional enterocolonopathy (irritable colon syndrome) or pyloroduodenal irritability. Second, the completed diagnosis will classify the emotional state. This shall comprise, when possible, the 1) personality type; 2) the type of psychoneurosis if any; 3) the dominant emotions and moods.

5) *Therapeutic Principles:*—Attention to the organ or system derangement will follow orthodox lines. This embraces physiologic rest of the part, accomplished usually by diet and relaxing medication. Specific therapy will depend on the character of the physiologic disorder.

In functional derangements, treatment directed toward the organ per se must be looked upon as being purely palliative. Specific treatment is the adoption of measures directed toward removal of the cause. In these instances, unless some constitutional or endocrinal abnormality exists, emotional and tensional factors are at fault. A careful explanation of the mechanism of symptoms has great importance. Then specific therapy for the relief or amelioration of the emotional tension is undertaken. The institution of measures for achievement of better mental hygiene, in most instances, may be carried out by the psychoviscerally-minded internist. Psychotherapy likewise entails attention to environmental problems, the removal of tensions where they exist, and finally an attempt to have the patient achieve a greater degree of equanimity. If resistance is encountered or the patient proves refractory, then a psychiatrist will need to make a more concise psychological appraisal and organize therapy accordingly.

COMMON FUNCTIONAL DISORDERS

If one needs to stress the importance of a better understanding of functional disorders, it is necessary only to refer to their incidence. These affections give rise to a great number of office consultations with the general practitioner, and well over 50 percent of office visits to the gastrointestinal internist. Let us examine the list of some of the more common functional disorders of the alimentary tract. In my experience, the following conditions make up the great bulk of functional gastrointestinal diseases. They are arranged in the order of their frequency.

- Aerophagy
- Functional enterocolonopathies (intestinal neuroses)
  - a. so-called irritable colon (enterocolonospasm)
  - b. mucous colitis
  - c. emotional diarrhea
- Pyrosis
- Pseudo-ulcer syndrome
- Functional nausea and anorexia

Functional regurgitation and vomiting
So-called cardiospasm (leading to megaesophagus)
Biliary dyssynergia
Disagreeable taste (often bitter), bad breath, etc.
Rumination
Hysterical bloating (hysterical abdominal proptosis)

Time will not permit a discussion of any of the disorders listed. Our purpose has been to outline the philosophic and nosologic considerations required for an understanding of the so-called functional disorders. A return to the concept of psychovisceral disease has been responsible for renewed interest in functional disorders. Clinical medicine has now progressed to a stage where logical evaluation of functional-structural interrelationship in terms of emotional tension is possible. We are on the threshold of a more concise nosology of functional disorders.

A fruitful area of investigation has been opened in which the clinician, psychiatrist, physiologist, radiologist, may constitute a research team. It is hoped that this may lead not only to a better understanding of functional disorders of emotional origin but that the etiologic relationship of emotional tension to important structural diseases may be discovered.

Homeopathy in Retrospect[1]

By CHARLES S. CAMERON, M.D.[2]

SHOULD the title of my modest offering tonight suggest that I am about to conduct the interment of the greatest of the medical systems, let me deny that such is my intention. The record of homeopathy is not yet a "tale that is told", for there are still traces of it in at least two of our country's accredited medical colleges, a regularly published journal is devoted to it, a few homeopathic pharmacies continue in business, a score of homeopathic medical societies hold scheduled meetings and, I estimate, some eight or ten thousand duly licensed physicians prescribe it, largely or occasionally. Yet, viewed in the long perspective of the 150 years which have passed since the principles of homeopathy were fully fledged, it seems safe to say that the last lines are now being written in this remarkable chapter of medical history.

An appraisal of homeopathy requires that it be structured in the general scheme of the development of medicine and science, and that its origins be examined in their contemporary environment.

It is one of the major ironies of history that Samuel Hahnemann has been drawn by the chronicler as a quack and that he does not enjoy the reverence accorded so many of his contemporaries who shared an equal burden of error. For example, as Dr. Morris Fishbein has put it:

> "Benjamin Rush, the best-known American physician of his day, remarked in 1789 that he found all schemes of physic faulty and that he was therefore evolving 'a more simple and consistent system of medicine than the world had yet seen'. This, it soon appeared, was based upon a pathology in which all diseases were reduced to one, and all treatments likewise—a performance which greatly impressed his contemporaries, and left its author with the conviction that he had rendered medicine the same sort of service as the immortal Newton had contributed to physics. 'I have formerly said,' Rush declared to his admiring students in Philadelphia, 'that there was but one fever in the world. Be not startled, Gentlemen, follow me and I will say there is but one disease in the world. The proximate cause of disease is irregular convulsive or wrong action in the system affected. This, Gentlemen, is a concise view of my theory of diseases. . . . I call upon you, Gentlemen, at this early period to either approve or disapprove of it now.'
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> "Most of them approved, and went out over the United States practicing the heroic treatments deduced from the master's doctrine. These treatments consisted chiefly of bloodletting and purging, which were supposed to reduce 'convulsive action' by a process of 'depletion'—euphonious name for exhaustion. They were, if good for anything, literally 'good for what ails you' since by definition the same thing ailed everyone.
>
> "Nor were students the only ones impressed by the views of this medical philosopher. European physicians joined with fellow Americans in praising both his theory and practice. Lettsom, in London, declared that Rush united 'in an almost unprecedented degree, sagacity and judgment' so that he had astonished Europe. And Zimmerman, in Hanover, wrote Lettsom that not only Philadelphia but all humanity should raise a statue to this American Prodigy. When Rush died, in 1813, he was widely acclaimed the greatest physician his country had known.
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> "Three short decades passed, and an out-

[1] Read before the Section on Medical History, College of Physicians of Philadelphia, 21 October 1958.

[2] Dean, Hahnemann Medical College and Hospital, Philadelphia 2, Pa.

> standing American physician of the next generation found himself revaluing Rush's medical essays. The results were rather startling. 'It may be safely said,' observed Elisha Bartlett in 1843, 'that in the whole vast compass of medical literature, there cannot be found an equal number of pages containing a greater amount or variety of utter nonsense and unqualified absurdity.' "

Except for a few striking applications of the observational method in the physical sciences, it was an age of traditionalism and pragmatism. Pasteur had not discovered the bacteria, Lister had not advanced his asepsis, chemistry was just beginning to emerge from the chrysalis of alchemy, and the other fundamental sciences, anatomy, pathology, biology and physiology, were only then groping their way out of a quagmire of dogma and hypothesis. There were drugs in abundance but nothing approximating scientific pharmacology as we know it. Sanitary science and preventive medicine were unknown. Epidemics raged like prairie fires across the continents. Illness was regarded as a kind of demon and its treatment was predicated on driving it out—the more heroic the measures—the better. If one drug was useful, ten ought to be ten times as effective. Bloodletting, cupping, the application of leeches, purging and vomiting were standard practices.

Into this medical chaos, in 1755 at Meissen, Samuel Hahnemann was born. Even during his medical student days at Leipzig and Erlangen he gave evidence of dissatisfaction with doctrines and practices then prevailing. His disquietude and restiveness were not confined to medicine but appear to have been basic personality traits. After a forlorn year at Hettstedt, he moved on to Dessau, then to Gommern, Dresden, Leipzig, Georgenthal and so on through 22 moves—an impressive and, to a psychiatrist, probably a symptomatic record—even for one who lived so long. So frequent were his uprootings that one wonders that he found time to sire 11 children. A widower in his later years, at 80 he married a Parisienne of 30 who, for reasons not stated in the biographies, remained devoted to Samuel until his death at 88 did them part.

Perhaps, as has been claimed by some, it was during his translation of the *Materia Medica* of William Cullen in 1779 that he became interested in Peruvian Bark, the source of quinine. Cullen said it would cure malaria, and so it did. What prompted Hahnemann to take quinine other than simple curiosity is not known. He did not have malaria. But take it he did, and thereby he planted the seed from which his system grew and to which he gave the name "homeopathy" in 1807. Quinine, in fact, produced certain signs and symptoms which themselves resembled malaria in Hahnemann's view. Then came the hypothesis—drugs cure disease by causing lesser diseases which the organism can effectively overcome—which is to say, "Similia similibus curantur" or "Like cures like."

There followed a period of twenty years during which Hahnemann worked prodigiously to accumulate data in support of his "law of similars" as it came to be called. An immense material medica was compiled, and he conducted continuous experiments on himself, his friends and those of his colleagues who were curious and willing. These clinical experiments were called "proving the drug" and no sign nor symptom which the prover experienced, or thought he did, in the weeks following a drug's ingestion was considered too insignificant to record. Obviously, their number and variety, occurring in persons who were expecting something to happen, were enormous. One decillionth of a grain of table salt was said by one imaginative prover to have produced 1,349 symptoms!

In theory, the mild and brief artificial disease, superimposed on the natural disease, elicited the instinctive "vital force" which thus fortified, overcame the natural disease. (It so happens that this theoretically evolved principle is a fair statement of the mechanism of vaccination.) Many of the drugs employed were in general use, but more were not. The index of homeopathic remedies ran to lachryma filia—the tears of maidens—to extracts of

pediculi and to favus irides, the yellow color of the spectrum.

No matter whether the drugs were sound or not, the second of homeopathy's prime principles rendered them wholly impotent. In a nutshell, the doctrine held that drugs increase in potency with their dilution. These are the author's words, "A single drop of a tincture to a pound of water, if administered in doses of two ounces every two hours will produce more effect than a single dose of eight drops of tincture." In some of Hahnemann's prescriptions he employed dilutions as high as one sextillionth, that is, one part of active principle to a menstruum consisting of 1 followed by 26 zeros—and he says that powerful effects were observed.

The third basic doctrine of Hahnemann was that psora, or suppressed itch, was responsible for a large proportion of all disease, in support of which he named thirty-one, including rickets, cancer, gout, jaundice, dropsy, asthma, cataract, and amaurosis. He added that these, "appear in our pathology as so many peculiar, distinct, independent diseases."

From the appearance of the *Organon* (1810), Hahnemann's size as a controversial figure increased. On one hand he was regarded as a Messiah by a growing number of physicians, who, let it be remembered, were orthodox by education and experience. On the other, he was held by apothecaries and medical officialdom to be a variety of unpleasant things varying from mistaken to crackpot. Yet, the company of adherents grew. Furthermore, the effectiveness of the prevailing therapeutics was such that it was not easy to establish the worthlessness of the "new school." Hahnemann's home became a mecca for the many who were justifiably dissatisfied with what they had been taught. And his position improved so that he succeeded in obtaining an appointment to the faculty at the University of Leipzig where he lectured to large classes twice weekly—expounding, the while, homeopathy. But his association with so orthodox an institution did not confer on him immunity from the charges of his confreres and he did not mollify them in his writings. He maintained a running charge of professional misfeasance. When an emperor or a prominent businessman died, he sought for reasons and when he could find them, he was ever willing to be quoted as attributing death to the ministrations of orthodox medical practitioners who bled, purged and otherwise assisted the patient to the grave. It is difficult to establish the fact that Hahnemann resorted to the public forum, as sometimes is charged, but if he was unethical in this regard, he was not without provocation.

Whether he was persuaded by his new wife or by the Leipzig faculty is not clear; the fact is that late in life he left the University and retired to Paris which proved a quiet haven after his many stormy years.

He had been, for all his vicissitudes, a sower of seed, and they fell, and their seed fell, on widening circles. By 1826 homeopathy had taken root in France, Italy, England and the Scandinavian countries. Usually rebuffed by licensing authorities, sooner or later it was legalized in one country after another.

Nowhere did it flourish as luxuriantly as in the United States. Perhaps the climate of democracy was more favorable. At any rate, the doctrine arrived in New York in 1825, conveyed by Dr. Hans Burch Gram—an American by birth—who was educated in Copenhagen and who practiced medicine there until the home ties drew him back at the age of 40. He had been converted to homeopathy two years earlier and one wonders whether this conversion may not have rendered the Scandinavian professional climate somewhat colder. Slowly at first, but at a quickening rate, Dr. Gram attracted cohorts—most of them bona fide practitioners. One of them, John F. Gray, in 1832 proposed Hahnemann for honorary membership in the austere and extremely proper New York County Medical Society. He had had the foresight to lend the Society's president a copy of an arbeit of Hahnemann written in Latin dealing with the powers of drugs. When the nomination of Hahnemann was presented to the Society, one Dr. Bernheiser objected on the ground that the man was a quack, but he

was called to order by the president who said that no one should so stigmatize anyone who could write in Latin. This silenced the opposition and the founder of homeopathy became a member. But not for very long. Eleven years later, at a meeting of the same society it was "Resolved that the resolution of November 12, 1832, conferring honorary membership in this Society on Samuel F. Hahnemann be and the same hereby is rescinded." Hahnemann had died eight days before the action. Nevertheless, homeopathy was gaining ground in the city and beyond.

The most important nidus of the new school was established in Pennsylvania German country only three years after Dr. Gram began dispensing in New York. On July 23, 1828, Dr. Henry Detwiller, a native of Switzerland, recently arrived, gave the first homeopathic treatment on record in the Commonwealth at Hellertown, after reading some books on the new system which had been sent to a colleague, Dr. Conrad Wesselhoeft. A small band of local practitioners undertook a systematic study of homeopathy and, again, as in New York, the new school was underway. Actually, a school in a narrower sense was underway, for in 1835, these and other professors of homeopathy founded, in Allentown, the North American Academy of the Homeopathic Healing Art. In spite of the early demise of this first homeopathic school in its third year, homeopathy appeared to have found its Eldorado in Pennsylvania. Practitioners of all ages and backgrounds began to dabble with it. Who would not try something new, when the old was so ineffectual? By 1844 there were enough homeopathic practitioners in the United States to justify a national society. They formed one and called it the American Institute of Homeopathy.

In February 1848, Drs. Constantine Hering, Walter Williamson and Jacob Jeanes met in the Philadelphia home of the latter and resolved to form the world's first homeopathic medical college. A group of corporators was formed, including many of the city's leading citizens. A building at 229 Arch Street was acquired and there the Homeopathic Medical College of Pennsylvania was quartered. A year later it moved to 1105 Filbert Street, a building previously occupied by the Pennsylvania Medical College and before that, by a church. Four years later the first homeopathic hospital in the state was opened in 1852—in what is described as a commodious edifice at 24th and Chestnut Streets. A hospital and dispensary were established some ten years later in immediate proximity to the college, and it is recorded that numerous veterans of the Union Army, discharged from army service as beyond repair, found there a refuge of rehabilitation and comfort. In 1885 the college merged with the Hahnemann Medical College which had been founded sixteen years earlier, assumed the name of the younger institution and included the hospital in the corporate title. In 1888 the college and hospital moved to the present site on Broad Street north of Race Street, and there occupied large buildings which were handsome in a Victorian way. The growth of this institution continues today.

Meanwhile, the "new school' was keeping pace with the country's expansion. Cells of homeopathists were formed in nearly every community large enough to have a medical society. In the period 1880–1900 they were at the height of their influence. Hardly any city numbering over 50,000 souls was without a homeopathic hospital and many smaller communities could claim them.

In 1890, there were 93 regular schools, 14 homeopathic and 8 eclectic. In 1900, there were 121 regular schools, 22 homeopathic and 10 eclectic. And, in 1900, the homeopathic doctors of the country, assembled in Washington, dedicated a monument to Hahnemann in granite and bronze on which are inscribed these words:

SAMUEL CHRISTIAN FREDERICK HAHNEMANN
Doctor in Medicine
Hofrath
Leader in the great medical Reformation of
the Nineteenth Century
and
Founder of the Homeopathic School

Curiously, from that year on the influence of homeopathy waned, bested, of course, by the development of scientific medicine.

The number of homeopathic schools dwindled—they died on the vine or were absorbed into stronger orthodox schools.

As of this writing, there are two medical colleges where homeopathy is taught. A few lectures offered as electives are available at the Hahnemann Medical College and the University of California School of Medicine. These are tokens to the past. Yet homeopathy has made contributions to medical progress which have been neglected in the long view.

First, Hahnemann fought vigorously for modification of the treatment of the insane and from the day he first saw the whirling chair in which disturbed patients were strapped, and the centrifugal effect of which on the cranial circulation was guaranteed to subdue the most obstreperous, he wrote and preached of the folly of attempting to overpower psychosis. He pled for an end to the floggings, to solitary confinement, to chains, to starvation rations. He went so far as to set up his own modest sanitarium where the mentally deranged were regarded as the sick people they were, instead of being exorcised. Curiously, an important part of his treatment consisted of the administration of drugs, and regardless of their effectiveness or lack of it, he employed a principle which now—in the past five years—offers the brightest promise yet uncovered for the relief and rehabilitation of the mentally ill.

Hahnemann was at his acid best in denying any virtue to the medical mode of his day—the routine depletion of body fluids—achieved by bleeding, by purging and by emesis. He charged his confreres with criminal malpractice and when the facts permitted, he named names and cited examples.

For most of his active life he stormed against the use of prescriptions containing many ingredients—not so much on the ground that they contained many as because they were employed irrationally. "Let nobody believe the writers of prescriptions when they affirm that by mixing several forms of diuretics together we obtain a mixture that is more diuretic. The fools! Generally, precisely the opposite happens. One medicine often hinders the other. But why do they mix so many together? Because they regard cures as they do a stake at lotto: if I stake on many numbers together, says the foolish man, I am bound to win. If they were right, then Zakutus Lusitanus with his fifty ingredients in one prescription must be the very matador of physicians.

> "Who would praise as a trustworthy medicine such a precarious, diverse mixture as would be compounded of seven, eight, ten, fifteen ingredients? Only the ignoramus. Try to send such a prescription to ten different good apothecaries: in every one of the ten the finished medicine will differ to some extent in odor, appearance, and taste (not to speak of its medicinal properties!). . . . Poor Hippocrates, with your merely simple medicines, what a clumsy figure you cut. God have mercy on all poor souls fleeing from their methodically cured bodies."

He advocated instead single drugs carefully selected which he presumed to be specific. Again, if his drugs were without merit, the principle he advocated has, in this age of scientific medicine, been adopted.

He was committed with all his mind to the observational method and no sign, no symptom, was considered insignificant. He demonstrated a precision technique of history-taking which was in sharp contrast to the custom of his colleagues. He said there are no diseases—only diseased people—and his philosophy of treating the whole patient has become a mark of the profession's intellectuals of our day.

He pioneered in attaching importance to the reactivity of organisms against disease. The goal of his therapy was to make the patient's defensive mechanism work, and here he was reaching toward the phenomenon we know as immunity.

Finally, he rejected in its entirety the claptrap of medieval traditions and he made out an eloquent case for the pharmacological experimental method. He labored mightily to per-

suade all doctors to test the effects of drugs on the normal organism, and if his vehicle was without merit, his direction was vastly significant.

These are some of the virtues of Samuel Hahnemann. He was an iconoclast—a voice in the wilderness. It is an unhappy circumstance that the therapeutic system he proposed was just successful enough to draw attention and perhaps acclaim from those of his dicta which time has proven sound. When the basic principles I have so cursorily presented are weighed in the balance against his more widely apprehended error and when the scale is viewed in the light of history, some of you may agree with the medical historians who have concluded that Samuel Hahnemann was a force for good and that he importantly influenced the steps of a beginning science into paths that were right.

Hahnemann's mistake was to reach too far. Yet had he not, he would probably not have reached at all.

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"La Guerre des Venétès" by Laennec—Translated Excerpts and Brief Commentary[1]

By WILLIAM P. BOGER, M.D.[2]

THOSE having any acquaintanceship with the French language have no difficulty in translating "La Guerre des Venétès" to mean "The War of the Veneti". Perhaps a fortunate few, who have been steeped in the classics are able to place the Veneti, but others, like the author, may need a hint. Julius Caesar fought with the Veneti and left a vivid account of his engagements with this tribe in his Gallic Wars (1). The Veneti are described as a robust and independent tribe, dedicated to maintaining their freedom from Roman domination at any cost. They were skilled seamen and had developed boats which were uniquely adapted to the shallow water, and the treacherous tides of their seacoast. When Caesar invaded that part of Gaul, which we presently know as Brittany, the Veneti felt secure in their ability to defend their stronghold as long as possible, retreat to the sea in their boats and take up new defensive positions. These tactics served admirably, but Caesar, the master tactician, devised means of overcoming the superior qualities of the vessels of the Veneti. His ire had been particularly aroused by the conduct of this tribe—"... The outrageous detention of Roman knights, rebellion after capitulation, defection after yielding hostages, conspiracy involving so many states, but most of all the danger that other peoples might assume the same license if this area were overlooked..."—and accordingly, when Caesar finally vanquished this people, he put their Senators to death, and then sold the other males into salvery.

But, why should we interest ourselves in this war if Caesar has already told the tale so well? Actually, the war in which we are interested involved Veneti of much more modern times and is described under the title—"La Guerre des Venétès: Poeme de Cardoe, Barde de Condivic Anterieur a Homere, Traduit de La Langue Celtique Par Le Docteur Cenneal, Professeur des Langues Primitives" (The War of the Veneti: Poem of Cardoe, the Bard of Condivic before Homer, Translated from the Celtic language by Dr. Cenneal, Professor of Primitive Languages). The warriors who took part in the battles described, albeit in obtuse fashion, under this title were at least Veneti on one side, and Dr. Cenneal on the other, qualifies as a true "Venetus". The real-life Venetus, who was so careful to obscure his authorship of the poem by the simple expedient of spelling his name backwards, was none other than René-Théophile-Hyacinthe Laennec (1781–1826). He was born in Quimper, a small town in Brittany, and exactly in that area where the ancient Veneti resided.

Several years ago the author began a search for monaural stethoscopes. "La Guerre" was brought to the author's attention by the purest chance. In tracking down some of the original types of "one-eared" stethoscopes, the author was referred to Dr. Alfred Courcoux of Paris, France. Himself a keen student of Laennec, and also a Breton which makes him "a Venetus", Dr. Courcoux was apparently pleased that some of us on this side of the Atlantic shared an interest in Laennec. A medallion struck on the occasion of the Laennec Centenary and a copy

[1] Read before the Section on Medical History, College of Physicians of Philadelphia, 17 February 1959.

[2] Director of Medical Research, Norristown State Hospital, Norristown, Pennsylvania.

of "La Guerre" were sent to me as gifts. It was some months after its receipt that time permitted a laborious reading of the text of this "heroic and comic epic poem". Whether the poem can qualify on its own merit as a literary effort, depends upon the judgment of others, but the author became more and more intrigued by the poem as a revelation of the personality and background of a youth, who at 19 years of age, was already an educated man and a qualified physician.

The French Revolution seethed around Laennec in his childhood and it is a matter of real wonderment how, in those confused times, Laennec received the splendid education that he did. Almost certainly, the order that was made to come out of this chaos must be credited to that "beloved Druid", Uncle Guillaume Laennec, himself a physician of renown (2).

Feelings about the revolution and about Napoleon's Republic were mixed in Brittany, and in 1800, a group of native born Royalists labelled "Chousans", started an insurrection and took over the town of Vannes. Of necessity, an expeditionary force was quickly organized by Napoleon to relieve the town. Having need of a field hospital to serve this force and medical men being few, Laennec was caught up in the maelstrom and pressed into service. At nineteen, Laennec already had considerable medical experience and he was accepted as a health officer, third class. There are few facts available about this military phase of Laennec's life, but it may be judged to have been short, and the whole affair of putting down the Chouans was little more than a minor skirmish. It did, however, serve as the setting for Laennec's writing of this humorous and satirical poem for the amusement of his comrades in arms.

Apparently, Laennec thought little enough of his creation, and there is no indication that he gave any further thought to it after it had served its purpose. The manuscript remained in the possession of Dr. Meriadec Laennec, son of Dr. Guillaume Laennec, until 1866, when it disappeared, and no one seemed to know its whereabouts. Dr. Alfred Rouxeau, in his great biography of Laennec (3) mentioned the poem and lamented the seeming loss of this interesting item. Much later the manuscript was found in the home of Madame Edouard Morin, a sister of the second wife of Laennec's father, Theophile-Marie Laennec, and was placed in the Laennec Museum in Nantes. The very existence of this work was little known until it was published in 1931 by Dr. Paul Busquet, the librarian of the Academy of Medicine in Paris. Through the graciousness of Dr. Miralie, then director of the School of Medicine and Pharmacy at Nantes, Dr. Busquet was privileged to study the original manuscript of "La Guerre" and reproduce it for publication.

It has been learned that only 830 copies of "La Guerre" were struck, and of this limited edition perhaps 400 were distributed. The volume is a small one, measuring approximately $6\frac{1}{4} \times 9\frac{1}{4}$ inches, approximately $\frac{3}{8}$ inch thick, bound in heavy, light-brown paper and running to 73 pages. It is the author's belief that this little volume which will be referred to as "the Busquet edition" is very little known. Although reference is made to "La Guerre" as a youthful accomplishment of Laennec (3–6) the very dates of these references deny the possibility of awareness of the "Busquet edition", which appeared in 1931. Further, there is no indication that there was any copy of the poem available, other than Laennec's handwritten manuscript. This suggests that, except for those privileged to visit the Laennec Museum in Nantes, there was no access to the poem prior to the "Busquet edition".

A diligent search and much correspondence has failed to reveal the existence of more than a few copies of the Busquet edition in the United States. One is to be found in the library of the New York Academy of Medicine, one in the Johns Hopkins University Institute of the History of Medicine, and a third copy in the Armed Forces Medical Library in Washington. The failure to discover any other awareness of "La Guerre", despite the fact that

numerous knowledgeable individuals were contacted, seems to justify the author's opinion that "La Guerre" is a "little known work" of the great Laennec, and one almost inaccessible to the physicians in this country.

It is undoubtedly true that anyone laying hands upon a copy of this little work will discover that a previous knowledge of Laennec, a background in medicine, and an appreciation (if not knowledge) of the classics will enhance one's enjoyment of the poem. Space does not permit the presentation of "La Guerre" in its entirety.* The subsequent translated excerpts may suffer from being taken out of context. However, it is hoped that they may contribute to awareness of this poem and stimulate some to read it for their own enjoyment.

As has been pointed out, Laennec, in the spirit of obscuring his identity as the author of the poem, spelled his name backwards, "Docteur Cenneal". Even so, he gives *Cenneal* status only as the translator of an ancient piece of literature, written by an apocryphal *Cardoe*, who is purported to be that ancient writer from whom Homer copied his style without giving appropriate credit. In his identity as *Cenneal*, Laennec gives voice to a complaint, the justice of which is attested to by many current writings.

> "We are sorry not to be able to quote here any passage from the ancient poets on Cardoe. However, the early Greeks and Egyptians knew him, as we have shown. The reason for this silence will be sufficiently clear when we recall that an author never talks about those whom he plagarizes". (pp. 25, 1.1–5)†

There is ample evidence that Laennec, despite his youth, was a splendid student of Latin and Greek. He is credited with having been equal of the professors of his day in his proficiency in the use of Latin and Greek. It may have been his way of showing further respect for, and appreciation of the classics, by assigning the original text of his mock poem to Cardoe, a forerunner of Homer. This aping of the ancients, and the creation of an imaginary writer from antiquity, bears some similarity to the hoax perpetrated by James Macpherson (1762–63) when he foisted upon a gullible public the poetry of Ossian, proportedly an ancient Roman. Perhaps Laennec, being the careful student of the classics that he was, may have been aware of this deception (which incidentally, many persons are still not aware of) and regarded it as a stratagem worthy of imitation.

Laennec credits to Cenneal the discovery of the ancient manuscript of Cardoe in the following way:

> "While we were meditating thus, a southwest wind sprang up, the sky became full of clouds, and soon a terrible storm forced us to seek shelter in the cavity of a rock. The tumultuous waves broke noisily and, rising into enormous mountains, often disclosed the bottom of the abyss and the remains of the towers of that proud city which the sea has kept covered for so many centuries. At the end of about two hours, the wind suddenly changed, the rain ceased, and we were able to leave the cave that had been our shelter. However, on descending from the rock, we were greatly surprised to perceive, among the sea-weed that the storm had hurled on the beach, a sort of keg of odd construction, almost like the wooden receptacles of the Gauls described to us by the ancients. Upon turning it over, we observed that it contained something. Curious to find out what this might be, we smashed it in with a big stone.
>
> "O Le Brigand, O Corret. Where were you? What joy, what admiration you would have felt if you had made this find that chance destined to the obscure D. Cenneal. You would have fallen on your knees before the precious manuscript if, like him, you had found one hundred and two thin sheets of tin, each about one foot square, and covered

* The author is indebted to Masson et Cie, Editeurs, Libraires de l'Academie de Médicine, 120, Boulevard Saint-Germain, Paris (VI), for their having granted permission to him to translate the Busquet edition and to publish such a translation in whole or in part.

† Pages and lines refer to the Busquet edition.

with Celtic characters. In our ecstasy, we seized these precious sheets and, as though fearful that the sea would snatch from us what she had just brought, we hastened away.

"Once more in our consulting room, we began to read, although with difficulty, because of the ravages of time and because we were but little accustomed to the Celtic characters, which we had never seen except in the French-Celtic dictionary of the Reverend Father Gregoire de Rostrenen, in alphabetical order. However, with a little work, we read the title and to our great joy, we saw it was a poem entitled "The War of the Veneti"." (pp 20, 1- 11–23; pp 21, 1–21)

As previously noted, Laennec was born in Brittany, and the people who populate this area are, in large measure, the survivors of the original Celts. It is a matter of common knowledge that a person speaking French has considerable difficulty in communicating with another who speaks the language of Brittany. In evidence of this is the documented statement that Laennec, in caring for the wounded, frequently gave greater comfort by his being able to speak to Bretons in their native tongue, than he did by the exercise of his medical skills. Perhaps it is not amiss to suggest that a physician, in any period of time, can give as much or more comfort by the use of soft words, and ones that the patient can understand, than he can by the use of tablets and injections.

In the spirit of pure humor, Laennec, in the guise of "compliments to the author in various languages", pays credit to Dr. Cenneal. One such compliment is translated as follows:

Congratulatory Ode to the Most Renowned D. Cenneal by whom Cardoe, Instructor of Homer, is Saved from Oblivion and Made a Frenchman

Come heavenly ones, desert the ridges of Pindus
And places once celebrated by the Maeonian lyre,
Yield, Roman writers, yield, Greek Writers
Something greater than the Iliad is being born.
This is the lofty song of the eloquent Cardoe

Fig. 1. Statue of Laennec, by Lequesne, formerly located in the Cathedral Square, Quimper, Brittany. Melted for scrap metal during World War II.

The poem due to your toil, O Cenneal.
Peter Friend - of - Bouriquen, Doctor of Laws, Melancholy Seneschal to Insulus. (pp 24, 1.1–11).

The rendition here given was arrived at only with great difficulty. The Latin verses appearing in the Busquet edition presented a number of difficulties to the Latin scholars to whom the author turned for help.* Laennec was well known for his facility in the use of both Greek and Latin and, it was incomprehensible that he would have made some of the obvious grammatical errors that appeared in the Busquet edition. It occurred to the author that perchance some errors in typography had been made, or even that Laennec's handwriting might have been misinterpreted. Accordingly, a direct appeal was made to the Laennec Museum in Nantes for a photostatic copy of this

* The author wishes to express his indebtedness to Dr. Gertrude Malz, Professor of Greek, Sweet Briar College, and to Dr. T. R. Coleman-Norton, Professor of Latin, Princeton University, for their assistance in translating the Greek and Latin text.

portion of the original manuscript. Through the kindness of Madame Galkowski, Librarian, and the special permission granted by Professor Auvigne, Dean of the Faculty of the School of Medicine and Pharmacy at Nantes, a photograph of the disputed passages was obtained. No less than eight errors were discovered, but certainly, we must sympathize with the person who endeavored to transcribe from the original. In common with a great many of the medical profession, Laennec's handwriting was not always the clearest. Further, taking pride in authorship, it is quite clear that he changed his mind fairly frequently in composing the verses, numerous words having been crossed out and substitutions made.

Verses 3 and 4 are of interest, for they are a direct quote from Propertius (7), and are the words written about Virgil, who was regarded by his Roman contemporaries as the equal of all of the Grecian greats who had preceded him. Although the Busquet edition does not indicate it, the handwritten manuscript gives clear evidence of the source of this passage. It is said of Laennec that he was scrupulous to a fault in giving credit to others in his writings.

There are many amusing episodes in the poem that might be cited,—a description of a military leader that bears a strong resemblance to Don Quixote astride his horse Rosinante (page 32, lines 3 to 6), a mature philosophy on the business of fighting and the likelihood of facing death (page 40, lines 7 to 20), the ignominious downfall of military might in the face of a little water and mud (page 47, lines 7–15), or the oblique reference to what must have been a minor lapse from virtue of Laennec himself (page 53, lines 11–25), but space does not permit. The author would be remiss, however, if he did not quote the following two passages.

Earlier it has been mentioned that Laennec owed a tremendous debt to his uncle, Dr. Guillaume Laennec. This author is quite certain that few men have received the warm and enlightened guidance from either parent or mentor than Laennec received. Laennec was obviously not unmindful of this fact.

"And I too was marching with these warriors, but my heart, closed to the fiery rapture that animated them, was calm and peaceful. Raised under the protective eye of a Druid beloved of the Heavens, my soul, modeled on his, never engendered anything but thoughts of peace. Insatiable ambition, devouring thirst for riches, never drew a sigh from my heart; never did the war cry of glory give rise to a gentle shudder in my soul. The study of nature had occupied the life of the wise guide of my childhood. Friend of man, he comforted them in their evils. I learned from him the secret virtues of metals and of plants; I studied, under his eyes, the structure of man, and I acquired some of the information that leads to that very difficult art of struggling against death and snatching from it the victims whom she would sacrifice before their time. "Cardoe, he said to me one day, you know that man is not born for himself alone; his brothers have rights sacred to his services. He is to be estimated only in proportion to his usefulness to Society. From the time that you are born, you feel the protective influence of the laws of your country, and you have not yet done anything for her. Here is the time to fulfill your obligation. Follow these warriors whom the morrow will find hastening to combat; that in the midst of the bloody fray the brave struck by a fatal arrow may find you ever ready to extend to him a helping hand, to pour upon his bloody wounds the beneficial essences of which I have taught you." (pp 30, 1. 17–21; pp 31, 1. 1–20)

Could any teacher or father ask for a finer tribute to his tutelage?

In medical writings Laennec has left ample evidence of his clinical acumen, of his clarity of observation, and of his brilliant deductions, but his description of the particular syndrome in this little poem is so accurate as to leave little room for doubt about the diagnosis.

"But suddenly the chief of the warriors, the fearless Ambiorix, feels his unsteady knees give way; a thick cloud spreads over his vision; he grows pale, tries to cry out.

His faithless tongue forms only inarticulate sounds. The hero feels his head crushed by an enormous weight. His viscera and his huge stomach are stirred up by a stormy agitation. A torrent of foul matter, issuing from his big gullet, soils his beard and hairy chest. We draw back, seized with horror at this frightful spectacle. Already death seemed depicted on his face, but the God of Combat, the bloody Ristindi, whose lead hammer strikes unavoidable blows, was watching over his favorite: He sends gentle slumber to his aid. The hero feels the presence of the God; he falls in the arms of his friends, who place him on a bed of soft hides, that he may repose more comfortably." (pp 44, 1, 8–25)

There can be little question that anything less than the complete translation falls short of giving to others the impression that the author has about this humorous poem by Laennec, but perchance these few translated excerpts may stimulate others to entertain themselves with this little work. Its merit as literature may well be questioned, but anyone able to "read between the lines" can discover a great deal about the youth of 19 who wrote this poem. Although chronologically young, Laennec had been matured rapidly and harshly in the school of life, as represented by French Revolutionary times. Far from embittering or breaking him, the circumstances modified by the interpretation and guidance of Dr. Guillaume Laennec, seem only to have enriched his understandings and feel for the pulse of humanity.

The "discovery" and translation of this minor poetic work of Laennec has been a stimulating cultural adventure for me. These few pages of verse, composed with no more serious objective than the amusement of his comrades in arms during a brief and unimportant military engagement, have revealed to this author, the personality of Laennec in fuller measure than has any previous knowledge of his scientific accomplishments. It is regrettable that so few physicians are aware of the extent of their indebtedness to this great clinician of yesterday. The *discovery* of the stethoscope, which is more truly than any other instrument "the badge of the physician", altered the entire course of medical practice. A greater accomplishment, however, was the painstaking use of the instrument to examine hundreds of patients, then to follow these patients to the autopsy table and correlate the *clinical* observations with the pathologic findings. Greater still, was his contribution of an entire vocabulary with which to describe the symptoms and signs of pulmonary and cardiac disease. But, impressive as these things may be, the truest measure of his greatness was the example of a life dedicated to medical scholarship and service to his fellow man.

In focusing attention upon the obscure poem, "La Guerre des Venétès" by René-Théophile-Hyacinthe Laennec, the author has endeavored to bring to light another aspect of this multifaceted genius.

Acknowledgment: The author wishes to acknowledge the generous collaboration of Miss Mildred F. Wilson, and express his thanks to her for helping to bring into existence a free-flowing translation of Laennec's poem.

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Dr. Robley Dunglison and Jefferson[1]

By SAMUEL X RADBILL, M.D.[2]

DR. ROBLEY DUNGLISON was imported in 1825 from England to teach the history and science of medicine to the youth of America. For nearly half a century thereafter he was one of the most widely respected professors in the field in this country. Some 5,000 new doctors who were launched upon their medical careers proudly displayed his signature upon their diplomas. Untold thousands were also guided in their work by what he wrote. Today few are aware of the influence he exerted upon a growing nation. Fame fades fast.

When Thomas Jefferson left the White House, he retired to Monticello and devoted much of his time and thought to education. The University of Virginia became the apogee of this devotion. In the original curriculum, Jefferson wanted a broad view of all academic studies covered. This was to include the history and elucidation of all the successive theories of medical science that had held sway up to his time, as well as a practical knowledge of anatomy, materia medica and the various branches of medicine and surgery.

Jefferson would have preferred to staff his university with American citizens. He had considerable correspondence with Thomas Cooper and wanted him to occupy the Chair of Medicine, but Dr. Cooper was a Unitarian and this raised objection to him on religious grounds. Rather than staff his pet university with American teachers of inferior abilities, Jefferson decided to look elsewhere for talent. Accordingly, in the Autumn of 1824 he sent Francis Walker Gilmer to England in search of professors for the new college. Gilmer was instructed to seek young men possessed of a due degree of science, talent for instruction and correct habits and morals. A man meeting all these specifications was recommended to Gilmer for the Professorship of Medicine. This was Dr. Robley Dunglison, a comparative youth rich in promise.

Robley Dunglison was then almost 26 years old. He had been born in Keswick, a town in the Lake District of England. After an apprenticeship with a surgeon of his native town, Dunglison had studied medicine in London, Edinburgh and Paris. Already he had written medical papers for the public and professional press, edited various medical works and authored a book of his own on the diseases of children. He was associated with some of the leading doctors of London, had been elected a member of several medical societies and was embarking upon a teaching career in the field of obstetrics and the diseases of women and children. Gilmer looked him over, made judicious inquiries and then wrote back to Jefferson that his prospect was, "a very intelligent and laborious gentleman and a writer of considerable eminence in various medical and anatomical subjects." He was just what the "Sage of Monticello" had ordered.

A solemn covenant was entered into in which, among other things, it was agreed that Dr. Dunglison "will proceed with as little delay as possible to the University of Virginia, and will there teach to the best of his ability, and with due diligence, anatomy, surgery, the history of the progress and theories of medicine, physiology, materia medica and pharmacy." This was not just a "chair" of medicine the fledgeling professor was expected to occupy. As Holmes would say, it was a full settee.

Dunglison arrived in Virginia with a young bride late in the winter of 1825. Jefferson took to him at once. He liked the young professor so much that he engaged him as his personal physician. Life's experiences had not yet ameliorated Dunglison's rigorous views on correct

[1] Read before the Section on Medical History, College of Physicians of Philadelphia, 17 February 1959.

[2] Past Chairman, Section on Medical History.

medical care and so we can smile when Dunglison later stated in his personal reminiscences that his aged patient submitted to his regimen without murmuring at "suffering inflicted upon him for remedial purposes." The ex-President was already an octogenarian by this time and suffered from an urethral obstruction which was treated by Dunglison by the passage of bougies of increasing size which he taught the patient to use on himself.

When Lafayette visited Monticello in 1825, he found Jefferson greatly incapacitated and was informed by Dunglison that the best catheters could only be obtained in Paris. Accordingly on his return home, Lafayette enlisted the help and advice of Dr. Cloquet to select a full case of one hundred elastic gum catheters which were shipped to Monticello. Unfortunately, they arrived too late.

As a patient, Thomas Jefferson was described by Dunglison as being most attentive and respectful to his physician, keeping memoranda of his medications in order to report the regularity with which he had taken the prescribed doses at the appointed time. The doctor generally visited his famous patient two or three times a week and frequently stayed to dine at Jefferson's table. In addition Jefferson might send a note or messenger to him reporting on his condition or requesting more medication. Streams of friends and well wishers visited the great man in his last days, and many of them urged their pet remedies or favorite physicians upon the ailing patient; but at no time did Jefferson wish to have any other physician than Robley Dunglison. When urged by a friend to consult Dr. Physick of Philadelphia, Jefferson's reply was that he had his Dr. Physick near him in whom he reposed his trust. In the Spring of 1826, just about a year after the opening of the University of Virginia, Jefferson was attacked by dysentery and failed rapidly. Dunglison was in constant attendance, but the venerated patient gradually lapsed into coma and quietly passed away on July 4, 1826, the semi-centennial anniversay of the signing of his brain-child, the Declaration of Independence.

FIG. 1. Portrait of Dr. Robley Dunglison, painted by Thomas Sully in 1868. Collection of the College of Physicians of Philadelphia.

Thomas Jefferson was eighty-two years of age when Dunglison arrived at Charlottesville and met him for the first time. His intellectual powers were then unshaken with age and he took an active interest in the affairs of the University, remaining in almost daily contact with it during that first year. He was an advocate of student government, but Dunglison did not think much of such a plan which denied the professors full authority in dealing out punishment for student offences. Dunglison was a fine teacher, but not a profound original thinker, and his opinions were greatly influenced by those he admired and respected. Contact with so forceful a character as Jefferson effected a decided influence on his way of thinking, a broadening influence which can be detected clearly in his subsequent writings and actions. He was greatly indebted to Jefferson for his repeatedly affirmed views on educating the public in medical matters, as well as Jefferson's strong beliefs as to the values to a republic of the diffusion of all knowledge among the people. With Jefferson, Dunglison agreed that this was the best means by which to combat medical superstition and delusion. "Preach a crusade against ignorance," urged Jefferson.

It was with this gospel in mind that Dunglison and his fellow pedagogues were brought to Virginia, there to disseminate every extant form of learning.

Dunglison was likewise swayed by Jefferson's feeling towards moderation in the use of drugs, for Jefferson realized the futility of plying the patient with "shot-gun" prescriptions. Indeed, he had little faith in physic and often told the youthful Dunglison that he would rather trust to the unaided, or, as he put it, "the uninterfered with," efforts of nature than to physicians in general. In later years Dunglison repeatedly taught this philosophy which he derived from his patron with whom he was associated for the brief period of one year.

In Virginia, Dunglison was a full time teacher, probably the first of the kind in this country. His medical practice was limited to consultations and the treatment of clinic patients for teaching purposes. However, he seems to have been adopted as a sort of physician-in-ordinary to the Jefferson family. As such he attended Jefferson's son-in-law, Governor Randolph, Jefferson's granddaughter and other members of the Jefferson family. In addition he was called upon for medical advice by at least three other of our country's Presidents; namely, James Madison, James Monroe and Andrew Jackson.

DUNGLISON AND JEFFERSON MEDICAL COLLEGE

When Doctor Dunglison arrived in Virginia, the nation as a whole was growing by leaps and bounds. The population was growing fast and every phase of human activity was on the upsurge. There was an urgent need for doctors and to meet this need medical schools sprang up in all parts of the country. The second medical school to appear in Philadelphia was Jefferson Medical College. It began operation in the Spring of 1825, just about the time Dunglison began his teaching career at the University of Virginia. His reputation as a medical educator soon spread and within four years (on June 15, 1829) we find Dr. William P. C. Barton, one of the professors at Jefferson Medical College inviting Dr. Dunglison to join its staff, but Dunglison declined. Again in 1831, Dunglison was invited to Jefferson, but still the inducements offered were not sufficient to entice him.

By this time, though, he was beginning to feel that better opportunities for his talents existed in larger cities. Besides, his wife was ailing and he felt that a change of climate would be beneficial to her health. In 1832 the medical faculty of the University of Maryland was reorganized and he was invited to join the new group there. After considerable negotiations, he was elected to that staff and taught at the Medical School of the University of Maryland from the beginning of the term in October 1833 to the end of the session of 1836. During the entire three years he was thus at Baltimore, there was constant discord among the faculty. Although he prided himself upon being a peacemaker, he still felt that Philadelphia was the great center of medical education in this country and offered larger opportunities. All this time, Jefferson Medical College, too, was having its faculty fights and the teaching staff was in a constant state of flux. Dr. Granville Pattison, at this period professor of anatomy at Jefferson, visited Baltimore, and became acquainted with Dunglison. He attended one of his lectures and was so pleased that he then expressed the hope that the two might become associated in the teaching of medicine. Dr. John Revere, son of the more famous Paul Revere, was another member of the Jefferson faculty at this time who came down to Baltimore to hear Dunglison lecture and was satisfied with what he heard. And thus it was that in 1836 specific and definite propositions were made by these men offering Dunglison a teaching chair in the Jefferson Medical College. Dunglison accepted and became professor of the Institutes of Medicine and Medical Jurisprudence. The Institutes of Medicine was a course that included the subject of physiology as we think of it today. The new professor was hailed "with unmixed gratification" in the annual announcement of 1836–37 and acclaimed as a scholar, a

profound physician and an enlightened physiologist of the highest rank, as well as an elegant and popular lecturer who had no superior. Dunglison fully lived up to these acclamations in a brilliant teaching career that lasted more than forty years.

He had not been in Philadelphia very long before he discovered that Jefferson was not a bed of roses. Born of a contentious heritage, Jefferson Medical College suffered all the pangs of professional intrigue that seemed to be the common lot of most medical schools in this country during the first half of the nineteenth century. When Dunglison joined the faculty as its seventh member he found two factions constantly at odds. The one faction consisted of Drs. George and Samuel McClellan and Colhoun; the other had Pattison, Revere and Green. Dunglison became the tie breaker who could decide nearly every issue. He loved to be considered a peacemaker and determined to be independent of either faction, judging every question that arose on its own merits as he saw it. In this role he was disappointing to both parties. However, this so-called "Dunglison policy of peace and good will to all" eventually resulted in harmony within the Jefferson faculty. In addition, he assiduously cultivated a friendly relationship between Jefferson Medical College and the University of Pennsylvania that ultimately redounded to the mutual benefit of both institutions.

Of George McClellan, the brilliant founder of Jefferson Medical College, Dunglison never had a high regard. McClellan was an intense individualist who was in frequent conflict with his colleagues. Dunglison's estimates of men were not always in conformity with the more indigenous American opinions. This is evident in the high regard with which McClellan was held by Dr. Robert Montgomery Bird, one of the pioneer literary lights of this country who was for a short time a fellow member of the Jefferson faculty and wrote a fine eulogy of George McClellan. Time, also, has served to present Dr. McClellan in a more mellow light, and his value in the progress of medical education is more evident to us than it was to most of his contemporaries.

In 1839 Jefferson Medical College broke off the loose attachment which had existed with its parent, the Jefferson College, since its inception. With this independence it acquired its own board of trustees. In a faculty quarrel that year, Dunglison wrote a letter complaining of the conduct of George McClellan which inadvertently reached the new board of trustees and the board proceeded to drop McClellan and his friend Colhoun. Samuel McClellan then resigned, and, two years later, both Pattison and Revere left. This final change in the faculty in 1841 resulted in stabilization and peace at Jefferson which has continued ever since.

The new faculty so carefully engineered by Dunglison was composed of Dunglison, Huston, Pancoast, Mitchell, Randolph, Mütter, Meigs and Bache. In arranging this coterie Dunglison made special efforts to have the two great seats of clinical teaching, the Philadelphia General Hospital and the Pennsylvania Hospital, represented on the faculty. Thus a vast amount of clinical teaching material at the two oldest hospitals in the United States became available to the Jefferson students. Dunglison, in 1838, had obtained the appointment as Attending Physician and Lecturer on Clinical Medicine at the Philadelphia General Hospital, and his lectures there attracted a large number of students. He lectured at the Jefferson Medical College Hall regularly every Monday, Wednesday, Thursday and Friday at 5:00 P.M., and at the Philadelphia General Hospital on Saturday mornings at 11:30 A.M. Any medical student in Philadelphia for $10.00 could obtain a ticket which entitled him to attend not only the lectures of Dunglison at the Blockley Almshouse, but also those of the University of Pennsylvania group of teachers, at that time Professors Gibson, Horner and Gerhard.

The Almshouse had moved about five years before from Ninth and Spruce Streets to Blockley Township on the West bank of the Schuylkill where it is now. This location was about

two miles from the two medical schools. The University of Pennsylvania was at Ninth and Market Streets; the Jefferson Medical College at Tenth and Sansom Streets, and so horse-drawn omnibuses were furnished free of charge to convey the students there. Experience had taught that it was unwise to commingle spirited medical students of the rival schools in the same bus, so that the students of each school were confined to separate buses designated for each school.

After the faculty reorganization of 1841, the number of students attracted to Jefferson Medical College grew rapidly. Within three years enrollment more than doubled, and after five years the school building had to be enlarged to accommodate the hordes of students. Dunglison was chosen Dean of the college in 1854. His fame spread far and wide and he was frequently sought by other schools, but he remained steadfast to Jefferson to the end of his life.

Robley Dunglison died on April 1, 1869. A meeting of the faculty met the next day to heap encomiums and eulogies upon his memory. The entire faculty attended his funeral and Dr. W. W. Keen, one of his protegés, was selected to deliver a memorial upon his life and character. All alike mourned him as an ornament to the teaching profession of this century and the special pride of Jefferson Medical College.

Memoir of Daniel J. McCarthy (1874–1958)*

By BALDWIN L. KEYES, M.D.

DANIEL J. McCARTHY, affectionately known as "D.J.", quietly moved away from us on October 9, 1958. "D.J." was watching television with his devoted wife, Betty, in their Atlantic City home that evening when he fell asleep and did not again awaken.

For some 84 years this exceptional and brilliant man moved wisely among us and left a helpful imprint upon all who met him, and particularly upon those who got to know him and love him.

The proudly Irish McCarthy family were implanted in South Philadelphia when "D.J." arrived on June 22, 1874. He grew up and developed in Philadelphia and obtained his medical degree at the University of Pennsylvania in the Class of 1895.

He interned at the Philadelphia General Hospital, served a year under Dr. S. Weir Mitchell at the old Orthopedic Hospital, and then went abroad to further his studies in neurology at Leipzig, Berlin, Vienna, and Paris.

Upon his return to the United States of America, he worked in the William Pepper Laboratories. He became actively interested in tuberculosis and worked closely with Dr. Lawrence Flick and his group at the Phipps Institute for many years. He was later appointed a representative to the International Congress for Tuberculosis in Berlin.

Dr. McCarthy was an internationally known neurologist and psychiatrist long before World War I. At its beginning he went to France, first to the American Hospital at Neuilly, then as liaison officer with the French Army. In 1916 he went to Germany as a special representative of the Government of the United States to study the prisoner of war problem, and was able so to improve conditions that he was decorated by the British Government. In 1917 he was sent by Secretary of State Lansing on a special mission to Russia to investigate conditions under the new revolutionary government; his report of this study changed the policy of the United States toward Russia at that time. In 1918 he was Commanding Officer of Base Hospital No. 115 in France, and consulting neurologist for the district, as well. Later he served as Judge Advocate of the General Court. After the First World War he continued his interest in national affairs as a member of the Advisory Council of the Veterans Bureau.

In the early 1920's Dr. McCarthy organized and led, for some years, the Mental Hygiene Committee in Pennsylvania, which has carried on an excellent program of education for prevention of mental diseases, and materially aided in the improvement and care of psychiatric patients in this State.

He was at one time President of the American Neurological Association and a leader and a dominant factor in the many scientific organizations of which he was a member.

Having always had an inquiring and investigative interest in all things, especially medical problems, Dr. McCarthy's studies of the neuroses in tuberculosis caused him to evolve a symptom complex known as the "McCarthy Syndrome" and later, when his professional activities did not permit time for research, he founded the McCarthy-Kirby Foundation at the University of Pennsylvania; the McCarthy Research Foundation at Temple University; the McCarthy-Dobbs Foundation at Jefferson Medical College, and the Philadelphia Institute for the Study and Prevention of Mental and Nervous Diseases. All these were organized to enable younger men to carry on studies which he himself had begun.

* Read before the College of Physicians of Philadelphia, 4 March 1959. Prepared and published at the request of the Council of the College of Physicians of Philadelphia.

As an Associate Trustee of the University of Pennsylvania and a Trustee of Drexel Institute, his enthusiasm contributed a great deal toward the training of American youth. For some 35 years Dr. McCarthy was Professor of Medical Jurisprudence at the University of Pennsylvania. By his stimulating example and unexcelled teaching ability he trained many younger men to follow his high ideals and fixed principles of clear, honest thinking, and did much to build an increasing mutual respect between the medical and legal professions. His virile, active mind and forceful dynamic personality were trained to concentrate with full force upon any problem before him, so that the crux of the situation and the solution were almost instantaneous processes. The subject of discussion in any group was to him, at that moment, the most interesting and most important subject, and thus received the benefit of his keen judgment.

Dr. McCarthy represented for the medical profession that which an accomplished and medically informed lawyer should be, and for the legal profession that which a legally trained medical man should be.

Although involved in an enormous and most exacting practice, Dr. McCarthy always insisted upon giving the best of his abilities even to the most lowly of individuals, who knew that they would be received as a friend, with intense sympathetic understanding.

At the height of his professional career Dr. McCarthy married Miss Elizabeth White, daughter of the distinguished Judge John J. White of the New Jersey Court of Errors and Appeals.

This was a most fortunate and happy marriage and lent color and light to his later years. Dr. McCarthy is at peace with the knowledge that his beloved wife, Betty, will always have with her their son, D. J. McCarthy, Jr., and his wife and daughter. This family was always a great and lasting joy to him.

During the last few years before his retirement, Dr. McCarthy was deeply interested in improving conditions surrounding juvenile delinquents, and so undertook the reorganization of the Medical Department in the Municipal Court in Philadelphia where, with the able assistance of President Judge Charles L. Brown, he was able to accomplish a great deal for the improvement of this service. Indeed, after his retirement from active practice, he continued for some six years actively reorganizing the Probation Department there.

Dr. McCarthy founded the Roseneath Farms Sanitarium and the Fairmount Farm Sanitarium in Philadelphia which, by their excellence, bear witness to his foresight in contributing to the adequate care of nervous and mental patients.

Just before the Second World War, Dr. McCarthy moved to Palm Beach, Florida, where he became interested in community affairs, and did a great deal to establish the Society of the Four Arts. He helped to found St. Mary's Hospital in West Palm Beach, where he served as Chairman of the Board of Trustees for ten years. Also in West Palm Beach, he founded the Mental Health Association and the Palm Beach County Guidance Clinic. Much of his last two years was spent, in collaboration with Dr. Kenneth Corrin, in the preparation of a book, "Medical Treatment of Mental Disease."

Time will not permit the listing of the numerous affiliations, publications, and other contributions which Dr. McCarthy made to the science of neurology and psychiatry.

Dr. McCarthy always played an excellent game of golf, and for relaxation did good work in pastels and water colors. He was a long-time member of Philadelphia's Franklin Inn Club, a literary group.

Perhaps the most important of the works of this genius, philosopher, physician, and public friend, has been his contribution through stimulation of many older and younger men, especially physicians at large, to function individually for greater purpose, for higher ideals, and with rising enthusiasm to accept the challenge of the seemingly impossible, and to seek solution for the many unknown factors existing in medical and social problems.

Philadelphia has been fortunate in having "D.J." McCarthy as an active leading citizen.

The College of Physicians of Philadelphia is proud, indeed, to pay homage to Dr. Daniel J. McCarthy.

Memoir of James William McConnell (1869–1958)*

By CHARLES RUPP, M.D.

JAMES WILLIAM McCONNELL, the dean of Philadelphia neurologists, died in Upper Darby, Pennsylvania, May 8, 1958, in his eighty-ninth year.

The son of a Methodist minister, Dr. McConnell's interest in medicine was fostered by his maternal uncle, the late Dr. Charles K. Mills. After a preliminary education in the Philadelphia public schools, he entered the University of Pennsylvania from whose department of medicine he graduated in 1890. He interned at the old Friends Hospital and then began the general practice of medicine in West Philadelphia where he became a popular and well beloved family medical advisor with a large group of devoted patients.

Shortly after his graduation he became associated with the neurologic department of the Philadelphia General Hospital which he served faithfully for many years as a chief on the neurology service. He did not retire from active service until 1946 and continued as a consultant until a few years before his death. In addition, he served at one time or another on the neurologic staffs of the Howard Hospital, the Roxborough Memorial Hospital, and the Graduate Hospital of the University of Pennsylvania. He was, at one time, professor of neurology at Temple University School of Medicine and for many years associate professor of neurology in the Graduate School of Medicine of the University of Pennsylvania.

* Prepared and published at the request of the Council of the College of Physicians of Philadelphia.

Dr. McConnell was greatly interested in nursing education and for many years took great pleasure from lecturing to the nurses at Philadelphia General Hospital. After serving as Vice-President of the Philadelphia Neurological Society in 1906 and 1907, he became President in 1908 and was again honored in 1937 when he was re-elected President. He was a faithful attendant of the meetings of the Philadelphia Neurological Society for many years. His kindness, friendliness, sympathy, and encouragement endeared him to the younger Philadelphia neurologists during their early insecure years.

Dr. McConnell was elected to Fellowship in this College in 1935. In addition, he was a member of The American Neurological Association, serving as its 2nd Vice-President in 1934, and was a member of the Philadelphia County Medical Society and the American Medical Association.

His wife, the former Bertha Wallace, predeceased him in 1952. He is survived by a son and a daughter.

Dr. McConnell was a link between the older generation of Philadelphia neurologists such as Mitchell, Spiller, Mills, Lloyd, and Weisenburg, and their present contemporaries. His anecdotes and memories of the early days of Philadelphia neurology were a never ending source of delight to those interested in the history of neurology.

Memoir of Leon Jonas (1883–1958)*

By T. GRIER MILLER, M.D.

LEON JONAS, a Fellow of our College, was born in White Haven, Pennsylvania, on August 30, 1883. He died in the University of Pennsylvania Hospital on September 29th, 1958. His parents were Joseph and Matilda Jonas, natives respectively of Germany and Alsace-Lorraine.

After graduation from the Central High School of Philadelphia in 1905, Leon entered the Medical School of the University of Pennsylvania and was graduated there in 1909. He had an internship in the Jewish Hospital of Philadelphia and later some clinical experience in the Philadelphia Hospital for Contagious Diseases. Then he became a George Woodward Fellow in Physiological Chemistry, under the supervision of Dr. Herbert Fox and later of Dr. J. Harold Austin, in the William Pepper Laboratory of Clinical Medicine at the University of Pennsylvania Hospital. This position he held until his retirement from the University in 1948. Meantime he became an Associate in Medicine at the University of Pennsylvania Medical School; for a time during the First World War he and I were Dr. Alfred Stengel's only ward associates. From 1918 to 1927 he also was Director of the Clinical Laboratory of the Jewish Hospital and its Chief in Metabolism. During all of this time and until his final illness he maintained a private office for the practice of medicine.

In spite of his routine and extensive laboratory activities and his private practice, Dr. Jonas found time for considerable investigative work, largely along endocrinological and metabolic lines. He was the author or co-author of thirty publications and the senior author of eleven of them. Sixteen of his publications were on the subject of diabetes mellitus, in which disease he was especially interested and to which he made some significant contributions. In this work he collaborated with Alfred Stengel, John H. Musser, Glenn E. Cullen, J. Harold Austin, O. H. Perry Pepper, Richard A. Kern, Isidor S. Ravdin, Eugene M. Landis, Isaac Starr, Francis D. W. Lukens and other clinicians. In many instances, as in a time-consuming investigation with me during 1924–25, he did most of the technical work.

On June 26, 1928, he married Alice Schwab, by whom he had two children: Ellen J. (now Mrs. Albert J. Feldman) and Leon Jonas, Jr.

Dr. Jonas was quiet and unassuming, deeply conscientious and meticulous in his work, well informed in his special field of activity and always ready to cooperate in worthwhile activities. He was interested in history and music, had a sense of humor, appreciated especially by those who knew him well, and was devoted to his family and friends.

* Prepared and published at the request of the Council of the College of Physicians of Philadelphia.

Memoir of Thomas C. Kelly (1882–1958)*

By JAMES A. LEHMAN, M.D.

THOMAS C. KELLY, the youngest of eight children of Dr. Joseph V. Kelly and Emma Jane Ferguson Kelly, was born in Manayunk, Pennsylvania, on February 22, 1882. His was a family of distinguished physicians for several generations. The tradition of medicine was strong in his family. His father, Dr. Joseph V. Kelly, and his two paternal uncles, Dr. Frank Kelly, and Dr. Louis Kelly, instilled a desire to enter their chosen field, not only in Thomas C., the youngest, but also in two of his older brothers, Dr. A. O. J. Kelly, and Dr. James C. Kelly. Their individual achievements have already been recorded in medical history.

He was educated in the local parochial school and at LaSalle College, receiving his A.B. from that institution in 1900. Then, following in the footsteps of his older brothers, he matriculated at the Medical School of the University of Pennsylvania, receiving his M.D. in 1904, and after further study, an M.A. from LaSalle College in 1906. He served his internship at the Hospital of the University of Pennsylvania and an additional year as a Resident in Medicine. His early career was identified with the University of Pennsylvania Hospital and its medical service. He was co-author of "Musser and Kelly—Practical Treatment", which was a standard text for many years.

He developed a keen interest in children and their diseases and turned his attention to the field of pediatrics. He was for many years Medical Director of St. Christopher's Hospital for Children, as well as a member of the Board of Managers. He was an Associate in Pediatrics at the University of Pennsylvania Graduate School of Medicine. He was Attending Pediatrician to St. Mary's Hospital and Misericordia Hospital, and Consulting Pediatrician to Fitzgerald-Mercy Hospital.

During World War I he served in the United States Navy, attaining the rank of Lt. Commander. In 1911 he married Bernadine Egan, of Philadelphia. Their marriage was blessed with five children, but only one of them lived to reach maturity. She is Mother St. Christopher of the Order of the Holy Child Jesus, formerly Catherine Kelly, and is the Principal of the Sharon Hill Academy.

Dr. Kelly had a long and enviable record of medical service to the community and to his country. He was a man of perfect uprightness and honesty, having great intellectual ability and high character. He was deeply religious, yet he never thrust his religion upon others—he lived it. He criticized sharply at times, but always constructively.

He loved friends and had many of them. He had a few very close friends who he cherished as something sacred. He was a charming companion and it was a delight to be in his company. He was an ardent golfer and a Founder of the Doctors' Golf Association, a member of the University Club, the Germantown Cricket Club, and the Philadelphia Country Club.

He died on April 22, 1958 in the Misericordia Hospital after a long illness. His love of medicine and of children was the keystone of his entire life. He was a living example of that admonition of the Great Teacher, "Suffer the little children to come unto me".

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Man in Space—The Medical Problem[1]

By MAJOR GENERAL OTIS O. BENSON, JR., USAF (MC)[2]

INTRODUCTION

I AM honored and pleased to appear before you this evening to present the 38th James M. Anders Lecture before the College of Physicians of Philadelphia. The distinguished physician, James M. Anders, lived in a dynamic era of medical progress to which he contributed so generously. His active participation in medical practice, education, and clinical investigation covered a span of slightly more than fifty-five years—a period of time comparable to that from the first flight of an aircraft by the Wright brothers to the present day. Much can be accomplished in fifty-five years by a gifted and dedicated man, as is evidenced by the life's work of Dr. Anders.

In the fifty-six years of human flight in powered aircraft we have progressed from the simplest of flying machines to the first flight of a potential space craft—the X-15. We read in our technical journals and the press that we currently have rocket engines capable of delivering a thrust of 300,000 pounds, with larger engines to come. The great technical advances in electronics, rocketry, astronautics, metallurgy, propulsion, and comparable fields, have radically changed our ideas about the potentialities of human flight, both within the earth's atmosphere and in space. The fact that rockets carry their own sources of combustion and are, hence, independent of the atmosphere, together with their powerful thrust, makes it possible to consider rocket craft for flights beyond the atmosphere into space itself.

I am confident that all of you are aware of the national program to place man in space for a short period of time, in a manned satellite. This endeavor is under the management and technical direction of the National Aeronautics and Space Administration and has been given the name, "Project Mercury." Since Mercury was the winged messenger of the gods in Roman mythology the title is apt when it is recognized that the orbiting of the earth by a manned space capsule is the goal. The objectives of "Project Mercury" in specific terms, are:

1. To put a manned space capsule into orbital flight around the earth.
2. To recover, successfully, the capsule and its occupant.
3. To investigate the capabilities of man in this new environment.

An intercontinental ballistic missile rocket booster will launch the manned capsule into orbit. The nearly circular orbit will be established at an altitude of 100 to 150 miles to

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[2] Commandant, School of Aviation Medicine, USAF, Randolph Air Force Base, Texas.

permit a 24-hour lifetime of the satellite in orbit. The descent from orbit will be initiated by the application of retro-thrust rockets, and parachutes will be employed after the space capsule has begun to be slowed by aerodynamic drag in the upper atmosphere.

The challenge to medicine has been issued! I can relate that the challenge has been accepted and, fortunately, that branch of medicine that we have chosen to call Aviation Medicine has been investigating the human problems of flight for the past forty-five years. Space Medicine, the logical extension of Aviation Medicine, has had formal recognition at the Air Force School of Aviation Medicine for the past ten years and, hence, we believe we have something of a running start on the problem of supporting man in space.

In the medical concept of space equivalency, elaborated by Strughold some years ago, we recognized from the physiological point of view that the conditions of space are encountered at relatively low altitudes. For example, the zero-gravity state can be produced in a Keplerian flight trajectory at low altitudes, and in actual practice our experimental zero-gravity flights are flown at about 18,000 feet. They could be carried out at a lower level were not flight safety a factor. At an altitude of 50,000 feet we are beyond the range where atmospheric oxygen contributes to respiratory exchange and at 63,000 feet the atmospheric pressure is just equal to the vapor pressure of body fluids at body temperature; hence, body pressurization is required to prevent ebullism at an altitude of 63,000 feet and higher. At an altitude of 75,000 to 80,000 feet it is technically impractical and relatively impossible to pressurize the cabin of an air vehicle; thus, the sealed cabin must be utilized. I should like to point out that we have witnessed in recent years a balloon flight to 104,000 feet and a flight of the X-2 rocket aircraft to an altitude of 126,000 feet and have obtained a speed of 2,100 miles per hour. The concept of space equivalence has served well to establish landmarks for us and to provide marker beacons as we advance further in the conquest of the vertical frontier.

To accomplish space flight one must be launched, progress through the earth's atmosphere into space, undergo space flight itself in orbital or ballistic pattern, re-enter the atmosphere and, finally, be recovered from a land or water landing. In an attempt to cover broadly the various medical problems to be encountered in manned space flight I should like to organize my discussion into the following headings:

1. Physical Environment of Space
2. Selection of the Astronaut
3. Medical Problems of Launch and Re-entry
4. Brief Discussion of Weightlessness
5. Closed Ecological Systems
6. The Status Today

THE ENVIRONMENT OF SPACE

The region of 600 miles out from the surface of the earth is frequently considered the outermost border of the earth's atmosphere. Beyond this general level the dispersion of the air particles is so infinite that intermolecular contact is rare. This boundary between upper atmosphere and space is further identified as that region where the uppermost geophysical phenomena, the highest aurora, are occasionally observed. For most practical purposes, the atmosphere ceases to exist at an altitude of 110 to 120 miles. The dispersed particles of space are primarily ionized hydrogen, together with highly dispersed particles of oxygen, potassium, sodium, silicon, calcium, and certain metals. These interplanetary particles are only part of the interplanetary matter. Micrometeorites, meteorites, and dust particles of meteoritic origin are components of space and of interest to space medicine. Dr. Whipple, the eminent Harvard astrophysicist, estimates that an earth satellite with a radius of 20 inches and skin thickness of 0.5 mm. of aluminum, will be punctured once in every five days in space flight. In addition, and of real significance to Space Medicine, is the fact that extraterrestrial

space abounds with electromagnetic and corpuscular radiation of cosmic and solar origin. Astronomers tell us that there are 100,000 or more stars similar to our sun in the Milky Way, each giving off radiations and particulate matter, and undergoing violent interplay with one another and with our sun's corona.

One of the great discoveries of the International Geophysical Year, just ended, was made by Dr. James A. Van Allen and associates. His new findings were achieved with minute radiation counters aboard the Explorer Satellites I, II, and IV, and Pioneer Rockets I, III, and IV. From Van Allen's observations there appear to be two radiation belts of moderate size surrounding the earth. These radiations stem from high energy electrons or protons held in the earth's magnetic field. The lower band is centered at an altitude of 2,400 miles and the upper one at 10,000 miles. Measurements indicate maximum radiation levels to be between 10 and 100 roentgens per hour if the radiations are protons and one-tenth that intensity of electrons or beta particles. Between the two bands the area is believed to be relatively free of radiation and at 6,000 miles the radiation intensity is thought to be only 0.3 roentgen per hour.

From the somewhat limited observations to date it would seem that there are corridors at the poles where orbital flight could be initiated or terminated to escape the "Van Allen Radiation Belts." Quite obviously, orbital flight nearer the earth is feasible from the standpoint of radiation, and rapid passage through the radiation belts can be accomplished without subjecting astronauts to damaging amounts of radiation, we would hope.

Unquestionably, extraterrestrial space abounds with energies of one sort or another—electromagnetic, kinetic, or potential. Fortunately, the earth's atmospheric mass and its magnetic field have shielded the surface of the earth to a habitable degree. Only parts of the spectrum—the infrared, the ultraviolet, and the visible light spectrum—are permitted to pass through, attenuated as they are.

The cosmic primary radiations appear to be a mixture of atomic nuclei ranging from hydrogen through iron and nuclei of heavier atoms. The energy level is high and is measured in millions of electron volts. Secondary rays and mesons are produced by impact with elements from our atmosphere. The biological effects of primary cosmic particles are not fully known, but the evidence so far obtained indicates ionization, such as is obtained with alpha particles, with quick energy dissipation, and production of ion pairs along short tracts. The hazard to an astronaut of primary cosmic radiation has been studied and debated. The opinions expressed are controversial, but the consensus at this time would indicate that primary cosmic radiation will not limit human participation in the space flights contemplated in the foreseeable future.

There are several commonplace physical phenomena that cease to exist in space: propagation of sound, conduction of heat, and aerodynamic support. The propagation of sound becomes impossible when the free path between air molecules is of the order of the wave length of sound. This occurs at altitudes between 60 and 100 miles, and above this the silence of space occurs. Interestingly enough, the sound barrier disappears and the Mach number has no significance in space.

The atmosphere conducts and convects heat energy, but in space there is only interchange by means of radiation. Once a space ship leaves the earth's atmosphere its temperature will depend, primarily, on how much solar radiation it absorbs. The side exposed to the sun will become heated while the shaded side will be cold. The vehicle must, in turn, radiate toward the earth the heat produced in it by the sun, the occupants, and by electrical gear. The shell of the craft must be made of a material that will reflect most of the intense solar radiation. The maintenance of a heat balance is obtainable, but will require careful engineering.

The atmosphere provides aerodynamic support and control for a moving aircraft. In space this lift is replaced by inertial forces caused by

the vehicle's tremendous velocity. At 120 miles' altitude there is no longer any aerodynamic lift, and vehicle guidance must be based on reaction controls. When the dynamic support by the atmosphere ceases and the inertial forces take over this function, completely balancing the gravitational pull of the earth, the vehicle and its occupants become weightless.

Beyond 140,000 feet altitude ultraviolet light is found in its full range and intensity, as in space. It is believed that ultraviolet radiation has strongly influenced the environmental conditions of all the planets. No great difficulty in screening out and attenuating the ultraviolet radiations in space operations is contemplated, but it will require attention.

Visible radiation or light is scattered by the air molecules of the denser layers of the atmosphere. This scattering, as is so well known, produces the daylight to which we are accustomed, and accounts for the blue sky. In space the particle density is too low for a detectable scattering effect and explains the deep blue to blackness of the sky away from the direct beam of the sun. The stars are visible against a black background at all times.

Of special interest from the standpoint of navigation is the gravitational situation in space. The gravitational field of our planet extends to infinity, but the sphere of gravitational attraction is of importance to the astronaut. Strughold has named these gravitational control zones, "Gravispheres." Interestingly enough he has charted the gravisphere divides between the nearby planets much as one would chart the divides between the main watersheds of a continent. The gravisphere of the earth extends to about one million miles. The orbiting of artificial satellites would always occur within this radius. Escape velocity thrusts a space vehicle eventually out of the earth's gravisphere into the gravitational territory of another planet.

SELECTION OF THE ASTRONAUT

On January 27, 1959, it was announced in the national press that a man was being selected to be the first astronaut. The announcement was made by the Administrator of the National Aeronautics and Space Administration, who stated, "The process has begun to select the U. S. citizen who will become our 20th Century Mercury orbiting the earth in space." The report went on to say that the selectee would be a university graduate with a degree in engineering or physical science, and that he would also have been trained as a military test pilot. Additional qualifications were: He must be in superb physical condition, possess the psychological and physical attributes suited for space flight, not be taller than five feet eleven inches, and be less than forty years of age. He would, naturally, be a volunteer for the assignment.

Perhaps the most poignant statement was that the aspiring candidate must possess the psychological and physical attributes suited for space flight. Although no one has ever had the experience of space flight, a fair job analysis has been accomplished, based on space equivalent flights of many types. We suspect that the initial flight into space will be potentially hazardous and stressful. Selection of a suitable man most certainly will be based on an examination of the candidate's tolerance to the physiological and psychological stresses of high performance flight. We shall not be able to test the applicant for tolerance to zero-gravity or weightlessness, but we can test his reaction to heat, to high centrifugal forces for varying periods of time, against pressure breathing and breath holding, and against other stresses that produce vagal storm effects, against vasopressor and vasotonic stimuli, and in claustrophobic and sensory deprivation situations. One quite naturally starts with a relatively young adult, obviously in good health, who is strongly motivated. A more searching physical examination than usual will be given initially to insure that the candidate is in fact a normal and healthy person. Test instruments not heretofore used in medicine will be employed, and they are: the human centrifuge, the space cabin simulator, total body irradiation counter, and the hyperthermia tester (hot room).

Since one of the objectives of the "Man in Space Program" is to investigate the capabilities of man in the new environment of space, we must assume that this first astronaut will have a job to do and that he must be capable of making the necessary decisions and observations, and of performing the needed tasks. We must pick a candidate who, under most conditions, has a better than normal tolerance range for physiological and psychological stresses, but we must work with the engineer to insure that the local environment for our man will permit him to remain within his functional limitations.

Quite obviously the astronaut, after passing his physical and psychological examinations, must be trained. By adequate training we can insure better responses under stress and perhaps improve stress tolerance.

MEDICAL PROBLEMS OF LAUNCH AND RE-ENTRY

The simplest form of space flight is orbital flight above the level of the atmosphere (120 miles). To obtain this, an orbital velocity of 17,500 miles per hour must be attained. To rise above the earth 120 miles or more and to attain orbital velocity require tremendous energy and high thrust. It is obvious that to raise a rocket craft from its launching pad the thrust must be greater than the weight. Since so much of the initial weight of a rocket is fuel and since the thrust remains constant, there is a tremendous acceleration as depletion of the fuel occurs. To obtain high thrust and lower relative weight at blast off, the engineers developed the technique of "staging" and "stage clusters." This makes use of the fact that the entire structure need not be lifted into orbit but large parts can be jettisoned as they exhaust their fuel. In this way relatively more structural weight and heavier payload are attainable at launch and the very high accelerations are not obtained. This is an instance where the shortcomings of engineering technology work to medical advantage.

Clark and Hardy working here in Philadelphia with the Navy Johnsville centrifuge have observed that human tolerance to acceleration is determined to a very significant extent by the amount the body is distorted by the force. The body distortion, particularly blood displacement, is more important than the amount of force applied. Tolerance is improved when displacement or distortion is prevented, as by body positioning and by various forms of support. Stapp has stated, too, that "by trading off magnitude against duration, man can modulate the exposure to accelerative and decelerative forces at relatively high degrees." In addition, the body axis in relation to the G-force is one of the crucial factors in human tolerance. When the forces are applied parallel to the long axis of the body, namely, parallel to the great vessels, the effect upon the circulatory dynamics is great. Recent work at the Navy Medical Acceleration Laboratory has shown that a contoured, or body-moulded support, covering much of the body, gives vastly improved support, and a subject has withstood a peak load of plus 25-G without "greyout" for 40 seconds. Both the Navy Laboratory at Johnsville and the Aeromedical Laboratory at Wright-Patterson Air Force Base have tested a number of subjects under high G forces while essentially supine in a water immersion capsule. One subject withstood 31-G for 5 seconds with the force applied back-to-chest. Tolerance time to fairly high acceleration is increased almost twofold by water immersion.

Three-stage accelerations, as would occur with a three-stage ballistic rocket, with peaks to 12-G sufficient to reach orbital velocity, can be tolerated by man in the transverse front-to-back direction, with the subject seated and the trunk forming an angle of 65 degrees to the extended legs.

The problems of re-entry are those of heat and decelerative forces—possibly of buffeting, if the manned capsule system cannot be adequately damped or stabilized. Abrupt decelerative forces could occur at the time of opening of recovery parachutes or upon steep re-entry into the atmosphere.

The great energy that was required to obtain orbital velocity exists as kinetic energy in the

orbiting space craft, and must be dissipated upon re-entry. In this area the margins of safety are so narrow and the parameters so critical that the engineers and space doctors must work closely together to obtain acceptable solutions.

In getting out of orbit the control of the trajectory for descent is very important. The initial flight path angle relative to the horizontal can make a great difference in the peak acceleration that will occur during re-entry. Stapp has concluded that decelerations of less than 40-G at rate of onset lower than 600-G per second and total duration of below 0.2 second can be survived with no persistent injury, in a properly restrained and supported subject while seated facing forward or backward to the direction of linear force.

The problem of heat dissipation due to thermodynamic heating on re-entry is largely one of engineering. The engineers speak of heat ablation and heat sinks; one is a method of quickly radiating the heat energy that cannot be reflected, and the other, a method of absorbing heat in a nose cone that soon can be jettisoned. Again, these are problems for the engineering sciences.

WEIGHTLESSNESS

Of all the novel situations that man will experience in space flight, the most unique is the state of zero-gravity producing weightlessness. The astronaut in an orbiting space vehicle probably will experience weightlessness for practically the entire voyage. There is no comparable human experience in a terrestrial existence and no simulation at ground level has ever been devised. The swimmer afloat in a body of water experiences a partially reduced gravity, but never becomes gravity free.

Within the gravisphere of the earth, weightlessness can only be obtained when the force of gravity is counterbalanced by an opposite force. In a free fall a body is essentially weightless, but no practical set-up for experimentation has been worked out using mine elevators or falls from aircraft. An aircraft of proper configuration and speed has become the laboratory tool to study weightlessness in human subjects, although the periods of zero-gravity obtainable to date are of the order of one minute or less. A typical Keplerian trajectory is flown in which the craft is guided along a parabolic arc, thereby utilizing the inertial forces to counterbalance the force of gravity.

In many zero-gravity flights employing a rather large number of trained subjects (flight surgeons) at the School of Aviation Medicine, at the Aeromedical Laboratory, and at Holloman Air Force Base, no significant evidence of disturbance of the autonomic nervous system has been observed in the short periods of zero-gravity flight so far obtained.

In all of our brief human experiments under reduced gravity we have found no major alterations in the physiological functions measured (heart rate, respiration, deglutition, micturition) and no disorientation as long as the visual function was not impaired. Orientation in space is maintained by means of the vestibular apparatus, vision, and the mechanoreceptors. They all react to external stimuli and provide information regarding the surrounding environment. Vision and touch are very important for effective reaction.

Possibly the main problem of weightlessness might be one of adaptation to periods of prolonged exposure. It might be assumed that such a function as maintenance of blood pressure, in the absence of vascular hydrostatic pressure, would be regulated by vasoreceptors or pressoreceptors. On the psychological side we have much more speculation than factual data. The medically and aeronautically experienced subjects we have used in our zero-gravity flights seem to enjoy the experience.

THE CLOSED ECOLOGICAL SYSTEM

Work is progressing on closed ecological systems designed to provide a physiologically acceptable internal environment for the astronaut on truly long journeys in space. However, before attempting to depict the space cabin of the more remote future, I should like

to describe, in epitome, the space cabin we envision at the moment.

Permit me to again refer to "Project Mercury"—the national man in space program. A published account of the manned capsule system stated that the manned capsule will have high aerodynamic drag, will be statically stable over Mach number range corresponding to flight within the atmosphere, and will be designed to withstand any known combination of acceleration, heat loads, and aerodynamic forces that may occur during boost or re-entry. There will be a heat shield covering the blunt leading surface. A couch fitted into the capsule will support the astronaut during acceleration. The internal pressure, the temperature, and the composition of the cabin air will be maintained within allowable limits for human environment. Interestingly enough, the pilot will be given the option of manual control and will have optical displays of portions of the earth and sky. The pilot or the ground controller will be able to fire the retrorockets to initiate reentry. Part of the instrumentation will permit two-way communication between pilot and ground. There will be medical instrumentation to evaluate the pilot's reaction to space flight and instruments to measure and monitor the internal and external capsule environment and to make scientific observations.

The forerunner of the sealed cabin was the sealed gondola, such as was used by the Piccard brothers, and by Stevens and Anderson in their balloon flights during the 1930's. Most of the problems of providing habitable environment for flights of short duration were worked out to an acceptable extent at that time. To date we have only refined the methods and equipment, and submarine medicine has significantly contributed. A new look, so to speak, is necessary right now because of the criticalness of weight. More than ever, life-sustaining equipment and scientific equipment are competing with the gear of automatic control, manual and remote guidance systems, and other communication, guidance, control, and safety equipment. Careful selection of components, miniaturization, and weight reduction are forced on all interested participants. For example, one searches for the most effective chemical to absorb CO_2, the best method to control water vapor, and simpler devices to sense and control temperature within the space cabin. We have done additional experimental work to assess the allowable deviations in terms of barometric pressure, CO_2, concentrations, and partial pressure of oxygen. We hope, constantly, that the engineers will allow us optimal physiological parameters. The most critical functions, obviously, are the supply of oxygen and the removal of carbon dioxide. The deleterious effect of carbon dioxide on mental function is a time-concentration phenomenon and for indefinite periods of exposure should be maintained below one percent. Chemical absorbents such as sodium hydroxide, soda lime, and other alkalies, are the only practical methods of removal at present. The weight of these chemicals for flights of very long duration dictates that new methods of CO_2 absorption or conversion must be found. Chemical methods of decomposition of CO_2 are under consideration. Temperature and humidity control must be provided by advanced conditioning techniques. Odor removal is purely aesthetic, for calculations disclose that flatus and other odorous material capable of being analyzed would not produce significant hydrogen sulfide levels for 2,000 days of exposure. Waste must either be jettisoned or stored for removal after flight has terminated.

In the contemplation of space flight of great duration it is quite apparent that some system must be devised to eliminate the dead weight of useless human by-products. The process of photosynthesis as a regenerative cycle using green plants, and possibly chemicals to accomplish the same function, for production of oxygen by the uptake of carbon dioxide, water and solar energy must be thoroughly investigated. Under simulated space cabin conditions it has been computed that each 24-hour period, a man consumes approximately 600 liters of oxygen, weighing 0.85 kilogram. At the same

time approximately 500 liters of CO_2, weighing about 1.0 kilogram, are produced. Photosynthesis is almost the reverse process of respiration, as shown below:

Respiration: $C_6H_{12}O_6$ plus $O_2 \rightarrow 6CO_2$ plus $6H_2O$ plus heat energy

Photosynthesis: $6CO_2$ plus $6H_2O$ plus light energy $\rightarrow C_6H_{12}O_6$ plus $6O_2$

Professor Jack Myers of the University of Texas, working with the School of Aviation Medicine, found that the gas metabolism of 2.3 kg. of fresh weight of an alga, *Chlorella pyrenoidosa*, under optimum conditions of temperature, light, and media, produced enough oxygen to supply one man. In a recent experiment using a closed, mouse-algae system, two mice were easily kept alive and active over a period of one month. The difficulties involved in such a photosynthetic gas exchanger lies in its bulk, weight, and power requirement for light. A chemical synthetic method of producing photosynthesis is to be sought.

The temperature of a space cabin is a critical consideration which must be solved by engineering. The inside cabin temperature is affected by the body heat of the occupants, the lighting equipment, and heat output of all electrical gear and, from outside sources, by friction in the atmosphere and by solar radiation.

The barometric pressure must be maintained at physiologically acceptable levels, the upper limit of which we have established as one-half atmosphere or the equivalent of 18,000 feet altitude. We have conducted a number of experiments for as long as ten days in which the human subjects lived at one-half atmosphere. The oxygen concentration varied from about 40 to 43 percent.

The ability to obtain power from space sources will determine the method of handling excess water vapor and body wastes. Just the other day a scientist drank a glass of clear water before an audience to whom he explained that it had been derived from human urine. Human wastes can be recycled, provided adequate power sources are available.

THE STATUS TODAY

The time table in astronautics will be determined by progress in the physical sciences, by technology in the areas of chemistry, engineering, and electronics, and by our national leaders, who determine the resources to be applied. Progress in bioastronautics will closely parallel the over-all advancements in rocket technology and the applied fields of engineering. It is of interest to me to observe the ever-broadening spectrum of scientific disciplines that are collaborating in the conquest of space. It is only in recent times that astrophysics and medicine have found great areas of common interest.

Space Medicine continues to be concerned with the biophysics of the environment of space, the biodynamics of a space vehicle moving through and returning from space, and the internal or engineered environment of the space cabin itself. In this connection one might again ask, "What is new in Space Medicine, and wherein are the problem areas?" The truly novel considerations are:

1. Reduced gravity and zero-gravity producing weightlessness.

2. Cosmic and other forms of ionizing radiation.

3. The possibility of flight with the time factor so unlimited, time thus becoming a new dimension.

The great challenge of Space Medicine is to evaluate the physiological effects of the space environment and to create an intra-cabin environment that meets the human requirements of space flight; to supply a favorable climate, proper nutrition; provide for a normal respiratory exchange; and to protect against injurious radiation and the forces of acceleration. We must learn to use the energies of space and apply these sources of power to the recycling of needed material rather than continue the storage and hauling of supplies. Dr. Strughold has suggested that thermosynthesis in conjunc-

tion with photosynthesis may solve some of the logistics of space travel. We actually debate at this time the ultimate necessity to provide capsule rotation and centrifugal forces akin to gravitational effects. We still must obtain data and experience to determine the extent and significance of the psychological problem of fatigue, the effects of prolonged confinement and sensory deprivation. We are studying the effects of disruption of the normal day-night cycle.

With the knowledge and technical developments at hand today I believe it fair to state that we could support a man in short orbital space flight just beyond the borders of the atmosphere (120–150 miles). For flights lasting longer than 7–10 days out into the far reaches of space there is need for much additional knowledge and technical advancement.

In concluding my comments I wish to remind you that in the time of Dr. Anders many of the great advances in medicine came in bacteriology, in histology, and in pathology. The names of Pasteur, Koch, Virchow, Aschoff, and other great investigators and teachers in microbiology and pathology come to mind. Dr. Strughold has pointed out, recently, that medicine has gone from the microscope to the telescope. In this connotation James Anders worked in the period when the microcosmos of medicine was being so successfully studied and exploited for human welfare. We now stand on the threshold of a new era in which medicine concerns itself with the macrocosmos —the vastness of space and the other planets. Interestingly enough, the Russian term for Space Medicine is "Cosmic Medicine"—a prophetic and apt term, indeed. I can only hope that we in medicine who are contemporary to the space age will be as successful in making useful discoveries of the macrocosmos as were Dr. Anders and his contemporaries in investigating the microcosmos of medicine in their time.

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Rabelais, Sterne and Osler: Companions in Wit*

By HERBERT F. WEST, M.A.†

THE subject for this Kate Hurd Mead Lecture in Medical History is a topic suggested by a chapter in Professor Gilbert Highet's *People, Places and Books*, published in 1953. Mr. Highet therein refers to Rabelais and Sterne as the real ancestors of Osler.

Although Sir William Osler was fond of Rabelais and Sterne, the most important literary influence on him was undoubtedly that of Sir Thomas Browne. Next in importance I would place Marcus Aurelius. In other words, Osler was most fond of the classical, not the romantic, writers. One might emphasize this by saying that when he listed ten books necessary for the bedside library of medical students neither Rabelais nor Sterne is among them. Like Rabelais and Sterne, Osler was a wide-ranging humanist and with Rabelais, was a doctor of medicine. Laurence Sterne was a clergyman in the Church of England, and Osler the son of one. In fact, William Osler early changed his goal in life from the ministry to medicine. With both Rabelais and Sterne, he shared a kinship in wit and wisdom. I wish to indicate briefly the contemporary importance of all three.

First let us start with François Rabelais (1494?–1553), one of the creators of our modern French language, humorist and humanist, man extraordinary.

Lately, when a generation of French writers has arisen to set up once again the ideals which, among others, Rabelais and Montaigne threw down, when individualism is particularly difficult to maintain against the pressures of the "organization man", when acquiescence to authority, both ecclesiastical and political, is preached by at least two-thirds of the human beings in the world, it is wise to read again the writings of Rabelais.

One must always keep in mind that Rabelais was a physician. He edited a collection of several works of Hippocrates and Galen, printed by Gryphius at Lyons in 1532. This little volume, *Hippocratis ac Galeni Libri Aliquot, ex Recognitione Francisci Rabelais*, is much prized by bibliophiles today. In the same year, there was first issued, by the same press, his edition of the Greek text of the Aphorisms of Hippocrates. Close to the earth, intellectually curious, enemy of superstition . . . living in an age when it was not only forbidden to study anatomy by dissection, but one in which Galileo later had had to deny that the earth revolved round the sun. His was truly an age excessively deferent to authority, an age in which science may be said not to have existed, and one which placed almost complete reliance on deduction as a way to truth. It was a time in which the higher educational institutions almost exclusively devoted themselves to futile and quibbling debates as to how many angels could dance on the point of a pin, and which insisted on everyone conforming completely to dogma, tradition and formal teaching.

Rabelais may be described as the first truly representative Frenchman after the Middle Ages. He was a shrewd observer, a man of vast and encyclopedic erudition, and a bold and telling critic. Though he cannot be called a great thinker, he mirrored almost perfectly sixteenth century France, and was its exuberant apostle of freedom as John Calvin was its rigid disciplinarian.

He was also a humorist of prodigious vitality. He has become a figure of legend: a buffoon, a great eater, drinker and laugher, and a wanton libertine. The word "Rabelaisian" has come to

* Kate Hurd Mead Class of 1888 Lecture in History of Medicine (XI), Woman's Medical College of Pennsylvania, College of Physicians of Philadelphia, Section on Medical History, 7 April 1959.

† Professor and Chairman, Department of Comparative Literature, Dartmouth College, Hanover, New Hampshire.

mean something gross and sensual. It would, of course, be a mistake to accept this legend in its entirety, though there is some truth to it. However, beneath his realistic and often coarse humor he was sincere and determined to attack the evils of his day. Furthermore, in order to escape the weight of ecclesiastical authority he had to conceal his satire in an extravagant kind of humor.

The French critic La Bruyère has said, "Where he is bad, he far exceeds the worst, that is what charms the vulgar; where he is good he achieves the exquisite and the excellent; he is fit for the consumption of the most delicate", that is, for spirits like Molière, La Fontaine and Voltaire.

As one reads the book he comes to believe that Rabelais' Pantagruelism (Pantagruel is a character through whom Rabelais often speaks) is a philosophy fit only for the élite of rare minds and not for everybody.

It is well known that Rabelais was early dedicated to the church, and that he received his education at the Cordelier Monastery under the Franciscans, where he became an expert in law, theology and medical science.

He also corresponded with the chief Hellenist of the times, William Budé.

At this time the study of Greek was forbidden, but Rabelais carried on his studies in secret. He also knew Latin and it was in these Greek and Latin fragments, drawn from the shadows of the cloisters, that two great civilizations lived again, governed by wise laws, upheld by heroic virtues, distinguished by eloquence, and embellished by poetry and the arts. For Rabelais and others, the Greek genius was in itself a liberator and a saviour. But what freed the soul was the effort to understand it. The ideas of Plato and Cicero were fruitful, but the industry and discipline of the men who endeavored to understand them were even more fruitful. Men at last dared to think. Believing that they were thinking through the ancients, they thought for themselves. This is one great importance of the Renaissance.

In 1524 Rabelais left the convent with the permission of Pope Clement VII, and joined the Benedictines. For six years he enjoyed the freedom offered by his former school friend Geoffrey D'Estissac, who was now Bishop of Maillezais at Poitiers. Although few facts are known concerning his life, we know that in 1530 Rabelais received a degree in medicine from the University of Montpellier. His interest in the sciences was scarcely second to his interest in the classics.

It is pertinent to note, then, at once, that one of the greatest doctors of the Renaissance was also one of its greatest humanists, which gives Sir William Osler an instant kinship with him.

Rabelais knew Clément Marot, the chief poet of his time, and Etienne Dolet, an early free thinker, printer and publisher, who was burned at the stake by the church in 1546. This served as a warning to Rabelais who, when the Sorbonne rumbled, and he feared the stake, disowned his publisher; "I am by nature sufficiently thirsty without becoming more heated." Associating with heretics and infidels brought Rabelais into intermittent persecution but he was always saved by his influencial patrons the Bishop of Paris, later Cardinal Jean Du Bellay, and his brother William Du Bellay, ambassador and statesman. In fact, on his second visit to Rome with Cardinal Du Bellay, Rabelais was absolved from past errors by the Pope, Paul III. The last we know of him, after being City Physician at Metz, during the years 1546–47, he was Curate on the estates of the Duc de Guise.

Rabelais' great book, *Lives Heroick, Deeds and Sayings of Gargantua and Pantagruel*, (1532–1534), as everybody knows, concerns a giant and his son, and is an extravaganza of rollicking fun, with a certain amount of hidden meaning. It represents in its impact "the full, brutal Renaissance."

Rabelais' mind, in short, was essentially the product of three disciplines: theology, law and medicine; with the influence of classical antiquity running through it all.[1]

Rabelais, like Molière, borrowed on all sides. When he describes Epistomon's journey

[1] Page 23 of Introduction, *The Portable Rabelais*, ed. by S. Putnam, Portable Books, New York, 1946.

through Hades he is borrowing from his favorite author, Lucian, but like all geniuses he consciously or unconsciously transformed everything he touched.

In Book One he satirizes the educational processes in his own times, which he himself had known only too well. Of scholasticism he writes, "It was better for Gargantua to learn nothing at all than to be taught suchlike books under such school masters, because their knowledge was nothing but brutishness and their wisdom but blunt, foppish toys, serving only to bastardize good and noble spirits and to corrupt all the flower of youth."

In Chapter 24 of Book One, Rabelais, in Gargantua's famous speech to the vanquished, represents perhaps the best and most liberal thought on war and peace expressed up to his time. When he argues clemency for the vanquished, he writes: "A noble action of liberality, done to a man of reason, doth grow continually, by his generous thinking of it, and remembering it." "I will not try war until I have tried all the ways of peace", he writes. He would agree with a fellow townsman of yours, Benjamin Franklin, that "There never was a good war nor a bad peace."

I suspect that one of Sir William Osler's favorite characters in Rabelais was Friar John: "no bigot or hypocrite, he is not torn betwixt reality and appearance, no wretch of a rugged and peevish disposition, but *honest, jovial, resolute, and a good fellow.* He travels, he labors, he defends the oppressed, comforts the afflicted, helps the needy and keeps the close of the abbey."

As a reward for his services, Gargantua founded for him the Abbey of Thélème, which was the real monastery's antithesis. Thinking back to his days in the Cordelier Monastery, Rabelais depicts just the opposite in this abbey which he locates on the River Loire, the lovely Touraine country of his birthplace. There are to be no walls or clocks. No women except those who were fair, well-featured and of a sweet disposition. No men except those who were comely, personable and well conditioned. Here anybody could come and go at will. Here there were no vows of chastity, poverty or obedience. The motto was, "Do What Thou Wilt." Here Rabelais depicts an aristocratic ideal: "Men who are free, well-bred, well educated, conversant with genteel folk, have by nature an instinct and spur which impels them to virtuous actions and restrains them from vice, and this they call honor." Rabelais is against all asceticism and is the champion of the sane and active life. "Drink stiffly (of life) to your heart's desire."

In Book Two he describes the pedantic collection of the library of St. Victor and provides an antidote to this pedantry, in a famous letter of Gargantua to his son Pantagruel, advising him "to live in peace, joy, health, making yourselves always merry", and at last, "to bear with anything that floweth from a good, free and loyal heart."

In Book Four, the Odyssey of the travellers on a voyage to Cathay or India in search of the Holy Bottle, is, according to Professor Lefranc of the Collége de France, "the journey which so occupied the minds of geographers and navigators from the time of the Renaissance down to our own day: the journey from the coast of Europe to the eastern coast of Asia through the famous Northwest Passage in the North of America, which had been so often sought in vain, and whose economic utility has remained doubtful even to our present day."

According to the historian, the late J. B. Brebner, in his book, *The Explorers of North America*, it is quite possible that Rabelais knew Jacques Cartier and had learned his nautical terms from him, and Mr. Brebner believes that Rabelais' pilot, Xenomanes, may be Jacques Cartier himself.

In the fifth book, which appeared after Rabelais' death, he wrote of Ringing Island, where bells are heard perpetually. With unpleasant monastical memories, Rabelais could not tolerate the sound of bells, and the dark picture of this country seems to be authentically his. Much of this he borrowed from Lucian's *True History.*

In consulting the oracle of the Holy Bottle it answers only one word, "Trinc". Panurge, the

wit, and fun-loving rover, interprets this to mean liquor and pleasure. Pantagruel interprets it to mean wisdom or, in other words, to drink deeply of experience for it is the solvent of life. Knowledge does teach us our real duties and does give rational happiness. "Trinc", then, in its deepest meaning, means: "Fill yourselves at the fount of knowledge. To know, in order to love, is the secret of life. Avoid the hypocrites, the ignorant, the cruel, free yourselves from vain terrors; study man and the universe, drink knowledge, truth and love."

Panurge's and Pantagruel's meanings of the word "Trinc" make up Rabelais' Epicurean philosophy: indulge your body but free your mind, too—"better to laugh than weep, then, if you can, for laughter is the special privilege of man."

The paradox of Rabelais may be ascribed to the fact that he addressed his book to drinkers. This is an affirmation of life itself, the resolve to live it and the courage to see it through, for experience alone can keep us sound and sane, whereas vain speculation, abstract monastic rule and abnegation, when placed in control, wreck nature and are its negation. All education must be an expansion and development, not a suppression, of nature's gifts. Egotism but not "ambition and self-interest", for being and action, nature and life, are one to Rabelais. This is a thoroughly French point of view, and one must never forget that Rabelais was a physician.

He loved nonsense for its own sake and is, I think, primarily a humorist and probably any satirical purpose was always secondary to his abounding fun, but in his day, any serious purposes in satirizing existing institutions had to be veiled by nonsense. With Erasmus in his *The Praise of Folly*, his heaviest attacks were directed towards the abuses of the ecclesiastical system. He satirizes the government of the church in his descriptions of "Ringing Island", where various dignitaries of the church appear under the guise of birds. "Ringing Island", of course, represents Rome.

In education he is a real humanist. He would stimulate by curiosity and reflection, and throughout his great book he attacks the pedantry then common to all the French universities. Nor does he in his educational program neglect the body, for in his schools he installs gymnasiums and baths and insists on cleanliness and hygiene.

A great American jurist, Learned Hand, has written in his book, *Spirit of Liberty* (1952), this French phrase, "Fais ce que voudra". "I would write", he says, "these words on the gates of every university and I would shape the curriculum solely to teach and read what these words really mean." Learned Hand is a wise man and his statement our current college presidents might well ponder.

Rabelais comes before Classicism had laid its restraining hand on French literature. He followed his own sweet will without regard to rules or form. His work seems Gothic, mediaeval, monstrous. He has many ideas of the Renaissance imbued with the spirit which grew from the discovery of America, the attack on the evils of the church and the rebirth of the classics. He represents the dawn of the Renaissance as Montaigne later represents the twilight. To Erasmus he had written, "You have brought me up; you have fed me at the chaste breasts of your divine knowledge; all that I am, all that I am worth, I owe to you alone. If I did not publish it aloud I should be the most ungrateful of men. Salutations once more, beloved Father, honor of your country, support of letters, unconquerable champion of truth."

Samuel Putnam, the most recent translator of Rabelais, sums him up:[2] "Rabelais' significance . . .: embodying the very breath and spirit and boundless *thirst* of the Renaissance era—a thirst for new and ever widening horizons, for human freedom and the good life for all—he was the first great and truly popular writer of modern times."

I am one of those who, before turning out the bedside light, often read something light like a good English detective story. The following

[2] Ibid, p. 2.

paragraph may bring us without undue jolt to the subject of Laurence Sterne. In Edmund Crispin's *The Moving Toyshop*, one of the better English mysteries, I found the following:

"Let's play 'Unreadable Books,' ", he suggested.

"All right. *Ulysses*."

"Yes. Rabelais."

"Yes. *Tristram Shandy*."

"Yes. *The Golden Bowl*", and so on.

Here we find a perfect score, two out of two. And in James Cameron's travel autobiography, *Touch of the Sun*, I found this paragraph: "I reflected that my plane did not leave for three days at the earliest. The only book I had with me was *Tristram Shandy*, a work I have carried practically all over the world in a determination that some day I shall be in such a condition of morbid isolation that I shall be compelled to read it. That day, it seemed, had come; the thought filled me with a sort of despair." Not a very good start.

D. W. Jefferson in his essay *Tristram Shandy and its Tradition*, published in Volume 4 of The Pelican Guide to English Literature, writes most intelligently of Sterne's great book, and I hope some of you may find time to read this. He describes the theme of *Tristram Shandy* as one that, "may be seen in terms of a comic clash between the world of learning and that of human affairs."

Mr. Jefferson writes: "A parallel to this theme may be seen in the third book of Rabelais, surely the most wonderful of the five. There is abundant evidence that Sterne knew it well. In each there is a central human problem, for the solving of which an immense body of knowledge is assembled: the question of how to give the infant hero the best start in life, the question of whether Panurge should marry. In each there is unquenchable faith in the validity of learning in its application to life. In each there is a series of phases or episodes in which one form of learning after another is brought to bear on the problem. In each the well-meant efforts are frustrated, in the one case by a mixture of human frailty and the cussedness of things, in the other by perversity in its most pronounced form."

Laurence Sterne, author of *Tristram Shandy* and *The Sentimental Journey*, apparently then is one who raises contradictory opinions.

In a book, *Talking of Dick Whittington*,[3] by Hesketh Pearson and Hugh Kingsmill (p. 234), there is this sentence, "Now to take one of the unlovable; Sterne has never appealed to me. He was a snivelling, abject, callous humbug, the inventor of the tear-behind-the-smile technique, which has dried the tears and withered the smiles of every modern man in the last 200 years." Whereas I found C. R. Leslie in his *Memoirs of the Life of John Constable*[4] wrote: "But I like that rule of Sterne's, 'Never mind the dogmas of the schools but get at the heart as you can' ", and again Leslie says:[5] "The language of the heart is the only one that is universal; and Sterne says he disregards all rules, but makes his way to the heart as he can." Virginia Woolf adds a word in his favor when, reviewing Wilbur L. Cross's *The Life and Times of Laurence Sterne*,[6] she speaks of Sterne's life as "like a romance", and writes of his genius as "of the rarest".

Sir Walter Scott once wrote: "In the power of approaching and touching the finer feelings of the heart, he has never been excelled, if indeed he has ever been equalled", and then Scott added: "He was one of the most original geniuses whom England has produced."[7]

Even the stern and dour Thomas Carlyle ranked Sterne with Cervantes as a great humorist.

[3] *Talking of Dick Whittington*, Hesketh Pearson and Hugh Kingsmill, London, 1947, p. 234. See, too, *The Moving Toyshop*, in Gollancz Detective Omnibus, London, 1951, p. 66, and James Cameron's *Touch of the Sun*, London, 1950, p. 68.

[4] *Memoirs of the Life of John Constable*, London, 1951, p. 129.

[5] Ibid, p. 121.

[6] *Granite and Rainbow*, by Virginia Woolf, London, 1958.

[7] *Laurence Sterne: A Witty Consumptive*, by Sir Arthur MacNalty K.C.B., British Journal of Tuberculosis and Diseases of the Chest, Volume 52, No. 1, January 1958, pp. 94–97.

Sterne was a notorious plagiarist, notably from Robert Burton's *Anatomy of Melancholy* (1621). His Rabelaisian humor often shocked his contemporaries and later the Victorians, but Uncle Toby and Corporal Trim and, we may add, Yorick himself, "more than entitle the author to a free pardon for his literary peculation, his indecorum and his affectations."

It must be remembered that for the greater part of his life Sterne waged a heroic struggle with the tubercle bacillus. His jester made the world laugh, but a death's-head grinned behind the mask. In his 46th year he began to write his masterpiece, *Tristram Shandy*, "the great humor of which," said Horace Walpole, "consists in the whole narrative going backwards." This was first published in 1760. His ill health forced him to take a trip to France, which resulted in his second well-known book, *A Sentimental Journey Through France and Italy*, which appeared in 1768. Soon after this appearance Sterne died, the 18th March, and was buried at St. George's Parish near Tyburn. His ironical connection with the medical profession is, that according to rumor his body was dug up by "resurrection men" and was recognized on the dissecting table of the Cambridge School of Anatomy.

Dr. John Ferriar was one of the first to point out[8] that *Tristram Shandy* had been derived by Sterne from many other authors. Ferriar also pointed out that Yorick was more or less a self-portrait, and that Sterne's sermons "abound in unclerical humor with indecencies not less gross than those of Swift and Rabelais." Ferriar thought Swift's dissertation on ears in *The Tale of a Tub* suggested to Sterne his *Hypothesis on Noses*. He also points out that when *Tristram Shandy* first appeared it excited as much perplexity as admiration, and he remarks, "Readers are often inclined to regard with veneration, what they do not understand. They suppose a work to be deep in proportion to its darkness." It was not the business of Sterne to undeceive those who considered his "Tristram" as a work of unfathomable knowledge. Like Rabelais, his great secret consists of exaggeration and certainly much of his buffoonery he got from Gargantua. The establishment of a buffoon, or King's jester, which operated so forcibly on Sterne's imagination as to make him adopt the name of Yorick, furnished an additional motive for other humorous writers of his period. Jesting set the proper key.[9] Ferriar writes: "From Rabelais, Sterne seems to have caught the design of writing a general satire on an abuse of speculated opinions. The birth and education of Pantagruel evidently gave rise to those of Martinus Scriblerus, and both were fresh in Sterne's memory when he composed the first chapters of *Tristram Shandy*. Rabelais had boldly attacked the scholastic methods of education and showed the superiority of a natural method of instruction, more accommodated to the feelings and capacities of the young.

"Sterne appeared to ridicule the folly of some individual and carefully avoided every controversial subject which could involve him in difficulties.

"Apparently Sterne copied passages almost directly from Rabelais, as in *Tristram Shandy*, Volume 3, Chapter 38. Sterne's 'Fragment in the Manner of Rabelais', moreover, gives striking evidence of the spiritual kinship existing between its author and his model.

"The quaintness of many of Burton's diversions in his *Anatomy of Melancholy* seems to have given Sterne the hint of his ludicrous titles to several chapters, and the risible effect of Burton's grave endeavors to prove indisputable facts by witty quotations, Sterne has aptly caught and sometimes well burlesqued.[10]"

It was also Dr. Ferriar who first pointed out, I believe, that Sterne's "Dr. Slop" was modelled on Dr. John Burton of York, whose book *Treatise on Midwifery*, 1751, agrees in many respects with the work ascribed to "Dr.

[8] *Illustrations of Sterne*, by John Ferriar, London, 1798. 2nd edition, London, 1812.

[9] Ibid, p. 86.

[10] Ibid, p. 86.

Slop".[11] The sages who passed their lives in silently contemplating the point of the nose were too common in Sterne's time to overlook this strange custom. Caspar Tagliacozzi wrote a book on surgery, and the fifth and sixth chapters were on the nose, and according to a French anatomist, Riolan, the nose is the index of genius and understanding.

Obviously Sir William Osler delighted in Sterne's book and all its ramifications, but was glad that "Dr. Ferriar, the distinguished Manchester physician had exposed the plagiarisms of *Tristram Shandy* in his *Illustrations of Sterne*, plagiarisms from another Burton, the "anatomist" of melancholy. Once while visiting in Yorkshire Dr. Osler wrote:[12] "But today I saw at York (with Dr. G. A. Auden) the very forceps which smashed Tristram's nose—looked at many things about Dr. Burton, the original 'Dr. Slop'."[13] Dr. Osler also speaks[14] of some notable Yorkshire physicians including Dr. Burton, "the original Dr. Slop", together with Laurence Sterne himself "who should have been a doctor".[15] Sterne's comment in his *Sentimental Journey*, "A heart at ease, Yorick, flies into no extremes—'tis ever on its center", itself recalls the *Aequanimitas* theme of his follower, Osler.

Once Osler, visiting Montreuil-sur-Mer, noted: "Here with Revere. Such a lovely walled town—the first stopping place of Sterne on his 'sentimental journey'." From this note one can see that Osler was always conscious when he was visiting Europe of Sterne's trip.[16]

It would be impossible in a brief talk to give a complete picture of all of the many influences on Sterne, as for instance the fact that the plan of *Sentimental Journey* seems to have been taken from certain French pieces, such as *The Voyage of Fontaine* among others, and it is obvious that Sterne imitated de Marivaux and Crebillon, particularly where they affect an excessive refinement and ambiguity in their language.

Virginia Woolf is always highly intelligent when writing on Sterne. She writes:[17] "Wilfully strange and whimsical of course Sterne was, but the spirit which inspired his humours and connects them is the spirit of the humorist; the world is an absurd place, and to prove it he invents absurdities which he shows to be as sensible as the views by which the world is governed. . . . Sterne skips immense tracts of living in order to concentrate upon the little whim or the oddity which most delighted him. His people are always at high pressure, with their brains in a state of abnormal activity. . . . Then when the news of his son's death reaches Mr. Shandy his mind is at once filled with the fine sayings of the philosophers, and in spouting them his private sorrow is completely forgotten."[18]

In the later books Mr. Shandy's invariable eccentricity tries our patience. An example of Sterne's sentimentality is quoted by Mrs. Woolf[19] in her story of Uncle Toby and the fly. " 'Go', says he, lifting up the sash and opening his hand as he spoke, to let it escape; 'go, poor devil; get thee gone, why should I hurt thee? The world surely is wide enough to hold both thee and me' ", and Mrs. Woolf goes on to say, "It is when his unmixed sentiment falls very flat that we begin to ask our-

[11] Ibid, p. 130.

[12] *The Life of Sir William Osler*, by Harvey Cushing, Oxford, 1925, Vol. 1, pp. 614–615.

[13] In July 1913, Issue No. 22 Canadian Medical Association Journal (pp. 612–613) Sir William Osler came to the defense of "Dr. Slop"—that is, of Dr. John Burton of York "who was not only a distinguished physician but the author of a celebrated work, still an authority, on the antiquities of Yorkshire.

[14] *The Life of Sir William Osler*, by Harvey Cushing, Vol. 2, p. 196.

[15] In the 1913 volume of the *British Journal of Obstetrics and Gynaecology*, Alban Doran defended Dr. Burton from Sterne's libellous portrait in *Tristram Shandy*.

[16] Vol. 2 of Cushing's *Life of Sir William Osler*, pp. 406–7.

[17] *Granite and Rainbow*, by Virginia Woolf, London, 1958, p. 171.

[18] Ibid, p. 172.

[19] Ibid, p. 173.

selves whether we like the writer, and to call him hypocrite." She sums him up as a man with "an exquisite and penetrating but not very exuberant genius, one who uses his emotions twice over", a man who lived "a life of extraordinary flightiness and oddity with the infinite painstaking and self-consciousness of an artist. He was a bundle of impulses and sensations scarcely checked by reason." She concludes:[20] "His fame depends partly upon his inimitable style, but rests most safely upon the extraordinary zest with which he lived, and upon the joy with which his mind worked ceaselessly upon the world."

The humor of Laurence Sterne, like the melancholy of Jacques, is "compounded of many objects," some of them strange and fascinating, others dated and uninteresting today. *Tristram Shandy* falls into the literary tradition of "learned humor."[21] It is the tradition of Chaucer and Rabelais, Erasmus and Richard Burton, the humor of men who took all knowledge for their province and is based on their mocking and satirical inspections of the sum of knowledge as it existed in their day.

In essence, to enjoy *Tristram Shandy*, we must enjoy Sterne himself. He is continually before us as he tells his tale. Unless we like the man and are in sympathy with his point of view, we gain little pleasure from his work. An important problem confronting us in our attitude towards Sterne is his concentration upon sex, particularly the male genitive organs and impotence. If this outrages us, as it did Thackeray, there is little that can be done about it. If, however, it is only a minor point that is occasionally distasteful to us, this is no doubt more a question of manner than matter. Sterne never indulges in the hearty ribald laughter of Rabelais or Chaucer, but, as Thackeray pointed out, "He sidles up and whispers a nasty story."[22] It is the whispering that offends us, not the stories. His manner is more often a leer than a laugh, and Sterne's use of connotation, double meaning, and innuendo towards this end often lends an air of lewdness to his work. We sometimes wish he would come out and say what he means.

However, whether we approve of Sterne's prurience or not,[23] it appears as a quintessential element of his humor. Sex has always been an important leavening in humor, and Sterne's humor is no exception. We realize how much the humor of *Tristram Shandy* depends upon Sterne's ribald conjectures and suggestions when we come upon *A Sentimental Journey*, in which this element is for the most part absent.

Whether this absence indicates that Sterne was desirous of placating his critics and making peace with God, or whether it is merely a change of temperament is difficult to decide. The fact that Sterne was writing many of the later ribald portions of *Tristram Shandy* the same time he was composing *A Sentimental Journey* makes the latter conjecture appear doubtful. It seems more plausible that his intention in *A Sentimental Journey* was to appease the portion of the public that had objected to the amoral connotations in *Tristram Shandy*.[24] At any rate, it is obvious that by muffling the more cynical and racy elements of his humor, Sterne produced a book that teems with sentimentality of the worst sort. Not that it is an unsuccessful book.

[20] Ibid, p. 175.

[21] Treated intelligently by D. W. Jefferson in his *Tristram Shandy and its Tradition*, The Pelican Guide to English Literature, Volume IV, pp. 333–345.

[22] Quoted by Bergen Evans in his introduction to the Modern Library edition of *Tristram Shandy*, New York, 1950, p. XV.

[23] And it is not an overwhelming flaw unless one is very moral (like Johnson and Goldsmith), or one looks for prurience very carefully, as apparently Thackeray did.

[24] Virginia Woolf in her introduction (p. xiii) to the Oxford University Press edition of *A Sentimental Journey* (1935) quotes Sterne as saying to Lord Shelburne, "The world has imagined because I wrote *Tristram Shandy*, that I was myself more Shandean than I really ever was.... If it (*A Sentimental Journey*) is not thought a chaste book, mercy on them that read it, for they must have warm imaginations, indeed!"

The staples of Sterne's art—his vivid characterizations; his depiction of the whimsical trivialities of life; his concise, yet lyrical prose—still remain. It is simply that the bittersweet humor of *Tristram Shandy* has been exchanged for a more saccharine sentimentality. The writing style is more precise and polished, but the overall effect remains less stimulating and masculine than in the earlier work.

What we have in the two major works of Sterne is a choice between his humor and his sentimentality. The ratio between them seems to be inverted in the two books. Quennell's contention that

> *A Sentimental Journey* is the most readable of minor masterpieces, just as *Tristram Shandy*, taken as a whole, is probably one of the least readable of works to which critics of the past have decided to allot an important place upon our bookshelves[25]

is rather misleading. The main reason why we find *A Sentimental Journey* more readable than *Tristram Shandy* is simply that it is one-fifth as long. A great deal of *Tristram Shandy* can be, and should be, skimmed, particularly the learned humor and scholastic quibblings which have little interest for us today. The parts in which Sterne deals with human experience, whether it be the fictional adventures of the Shandies or a close inspection of the discursive meanderings of the narrator's mind, have a more lively and stimulating air about them.

The qualities of *A Sentimental Journey* are the qualities of tiredness. There is a tranquil reflection and introspection, only occasionally interrupted as the narrator frantically flees from Death. Then he settles down again. The prose of the book is directed towards the same end. Sterne picks his words with an eye towards their peaceful, pleasant connotations, not their ability to stimulate doubts and comparisons. It is from this element of tiredness that *A Sentimental Journey* gains much of its beauty and meaning. It also produces the sentimentality and overbearing concern of the author that we think well of him. This by-product is unfortunate, but we can no doubt excuse it in an author who realized that the spectre of death was drawing grimly and doggedly closer as he wrote.

Dr. Osler was close to Laurence Sterne in his admonition of "the honest heart, which gives a sense of comradeship and fosters to an attitude of generous, friendly rivalry untinged by the green peril Jealousy, that is the best preventative of the growth of a bastard scientific spirit." Mankind, it has been said, is always advancing. Man is always the same. The love, hope, fear and faith that make humanity and the elemental passions of the human heart remain unchanged, and the secret of inspiration in any literature, is the capacity to touch the cord that vibrates in a sympathy that knows neither time nor place.

An interesting reference to characters in Rabelais' *Gargantua*, Rondibilis and Panurge, appears in Osler's *Principles and Practice of Medicine*. This section, on the prophylaxis of syphilis, occurred unchanged through the first (1892) and sixteenth (1947) editions of this medical classic. It reflects Osler's idealism —and his fondness for alliteration:

"Irregular intercourse has existed from the beginning of recorded history and unless man's nature wholly changes, and of this we can have no hope, will continue. Resisting all attempts at solution, the social evil remains a great blot upon our civilization, and inextricably blended with it is the question of the prevention of syphilis.

"Personal purity is the prophylaxis which we, as physicians, are especially bound to advocate. Continence may be a hard condition, to some harder than to others, but it can be bourne, and it is our duty to urge this lesson upon young and old who seek our advice in matters sexual. Certainly it is better, as St. Paul says, to marry than to burn, but if the former is not feasible, there are other altars than those of Venus upon which a young man may light fires. He may practice at least two

[25] Peter Quennell, *The Profane Virtues*, 1945, p. 168.

of the five means by which, as the physician Rondibilis counseled Panurge, carnal concupiscence may be cooled and quelled, hard work of body and hard work of mind. Idleness is the mother of lechery, and a young man will find that absorption in any pursuit will do much to cool passions which, though natural and proper, can not in the exigencies of our civilization always obtain natural and proper gratification."

It is not my purpose here to emphasize Sir William Osler's great contributions to the history of medicine, though they will be noted. Instead, I would emphasize Osler's Christian and humanistic attitude, together with its corollary that the medical profession would indeed be wise if it pursued literary and humanistic studies along with its interest in medicine.

Whether the modern physician has time for such luxuries is perhaps not even debatable, but it is also true that Osler never tired of complaining that most doctors had minds too limited and too confined to the physical symptoms which they observed in the routine of their practices.

In his own life and work he kept trying to enlarge his own mind and that of his students, and indeed of his readers, whether of the medical profession or not.

What gave Osler so wide-spread an influence was, that, in contradistinction to so many of the noted European clinicians of the day, he was no mere one-sided man of science. Although he did more than anyone else to introduce precise laboratory methods and exact science into the field of American clinical medicine, he was a born humanist.[26] He loved books, collected them and read them by the score. But, according to Dr. Henry E. Sigerist in his book, *The Great Doctors*,[27] "he was not one of those neo-humanists who believe that the world can be bettered in accordance with some fixed program. Scientific synthesis was for him something to be regarded as a matter of course, and was achieved in his character and in his work. In 1889, at the very opening of his activities at Johns Hopkins, he founded a society for the study of medicine which is still an active nucleus of humanism."

I am greatly indebted to Dr. Henry R. Viets, of Boston, Massachusetts, for a personal memory and glimpse of Sir William Osler which may be brought in at this time, as it gives a somewhat vivid picture of one great doctor in action. It concerns the case of Dr. Osler and the "tongue-tied medical student."

"The two qualities of William Osler that stand out most clearly forty years after his death, in addition to his great intellectual achievements, are his sunny disposition that had 'no winter in it' and 'grew the more by reaping', and the dolphin-like delights that frequently flashed up from the strict environment in which he lived. Both of these elements are recalled by an incident that I happened to witness as a young physician during the gray winter of 1916–17 when the heavy hand of a catastrophic war was ever present in Oxford. There were few moments of relaxation for Osler but, in spite of his strenuous official life, he never neglected his civilian duties to the patients in the local hospital, the Radcliffe Infirmary. He made 'rounds' as frequently as time would permit and it was often my privilege to accompany him. The great university, moreover, still ground on and a few medical students from the hospital schools in London and elsewhere came back to Oxford to take their final degree.

"I only remember one of Osler's students, a brilliant chap, whose clinical bedside examination was conducted at the Radcliffe Infirmary. As was the custom a visiting professor from another university conducted the final test. In this instance the examiner was Sir Thomas Clifford Allbutt, Regius Professor of Physic in the University of Cambridge, a renowned classical scholar and meticulous clinician, well known for his preciseness of thought and his insistence upon the highest standards of medical education. Allbutt, then eighty years

[26] A student of the ancient classics and of the human race.

[27] *The Great Doctors*, Henry E. Sigerist, New York, W. W. Norton Co., Inc., 1933, p. 400.

of age, was an alert, spry, kindly gentleman, with something of Osler's wit and sweetness of character. Although more than a dozen years older than Osler, the two Regius Professors were a matched pair, quick to catch the underlying significance of any given situation and motivated by a kindness of heart and broadness of vision, seldom attained in such a degree by mankind.

"Osler and I entered a long ward with parallel beds extending down on each side. With his arm linked in mine, as was characteristic, he passed from bed to bed with a word, a smile of recognition, a wave of a hand and the pale faces lit up at his cheery presence with a glow that is unforgettable. We were simply passing through on the way to another section of the hospital but Osler left the stamp of his personality at every step. He quickly perceived, moreover, a little tableau being enacted at the further end of the ward. On one side of a bed stood Sir Clifford, quiet and thoughtful, gazing down at the patient in the bed who seemed a little amused by the situation for he faintly smiled and there was a twinkle in his eye. On the other side stood a young man obviously inarticulate, pale and sweating, with mouth open, completely uncommunicative in the stilly atmosphere. Osler knew all three of the actors in this little drama well, for the kindly Allbutt was one of his oldest and most intimate friends, the patient had been thoroughly examined a few days before and the diagnosis fixed, and the voiceless boy was one of his best pupils, thoroughly trained and competent to pass the examination with highest honors. As we passed the group all the formalities of the rigid standards of examination were upheld by both Osler and Allbutt. Neither gave sign of official recognition, but Osler, with a smile for the student and a slight wink for the amused patient, touched Allbutt lightly on the shoulder and said in his low, musical voice, "Clifford, I knew you would be interested in that most unusual example of amyotrophic lateral sclerosis", and walked swiftly on to the door at the end of the ward. As we crossed the threshold Osler never looked back but, glancing over my shoulder, I saw that the dam had been broken and there poured forth from the student a torrent of erudite discussion of this rare neurological disease accompanied by a full explanation of the signs and symptoms found in the patient before him. No torrent ever rushed down a mountain side more rapidly and turbulently as the words came from the mouth of this boy, and Allbutt, with the crows feet wrinkling up his eyes, smiled in grateful recognition for the man who had had in a fleeting moment such superb understanding and had saved the life of a drowning man."

Dr. Edward M. Brockbank,[28] in his book published in London in 1950 on John Ferriar and William Osler, writes: "Osler wanted to pass on through life in a quiet imperturbable habit of mind, with a philosophy which Antoninus Pius (father of Marcus Aurelius), one of the best of men and wittiest of writers, summed up in the watchword "aequanimitas", (which incidentally is the title of one of Osler's books). I have an affectionate memory of him in such mood and mind whenever we met."

Much of my recent review of Sir William's writing was gleaned from a volume edited by Dr. Richard E. Verney of Edinburgh, entitled *The Student Life*, with the sub-title, *The Philosophy of Sir William Osler*, which was published in Scotland in 1957.

From Dr. Verney's introduction I gathered that the medical profession universally regarded Sir William as one of the great leaders of medicine, not only in its practical affairs but in the development of its ethical and philosophical foundations. Osler himself was learnedly grounded in the scientific basis of medicine, was a fine pathologist, a skilled diagnostician, and was a gentle and good physician. His textbook remains a memorial to his essential greatness. His most outstanding gift, however, was his capacity for inspiring others with his own enthusiasm for medicine and for its ideals of integrity and service.

[28] *John Ferriar, William Osler*, by Edward M. Brockbank, London, 1950, p. 46.

All who knew him, knew also, that he had a puckish sense of humor.

One of Osler's excellent counsels as a physician and a wise man may be found in his address given at Yale University on April 20th, 1913, called, "A Way of Life", in which he advocated a practice of living for the day only and for the day's work. He advised living in 'day-tight compartments'. He quoted Carlyle when he said, "*Our main business is not to see what lies dimly at a distance, but to do what lies clearly at hand.*"[29] One should shut off the future as tightly as one shuts off the past. "The future is today—there is no to-morrow. The day of a man's salvation is *now*—the life of the present, of to-day, lived earnestly, intently, without a forward-looking thought, is the only insurance for the future. Be your own day's man!"[30]

Again and again he reiterates the idea that although medicine is to be your vocation or calling it is highly important also to have an avocation—some intellectual pastime which may serve to keep you in touch with the world of art, of science or of letters. He recommends Oliver Wendell Holmes, Shelley or Keats, Shakespeare, Montaigne, (called by Saint-Beuve the wisest of Frenchmen), and above all Sir Thomas Browne, whose book *Religio Medici* he says was introduced to him at a school near Toronto when he was very young, and adds, "No book has had so enduring an influence on my life."

He quotes Seneca on books and reading: "If you are fond of books you will escape the ennui of life, you will neither sigh for evening, disgusted with the occupation of the day—nor will you live dissatisfied with yourself or unprofitable to others."

"The Art of Detachment, the Virtue of Method, and the Quality of Thoroughness may make you students, in the true sense of the word, successful practitioners, or even great investigators; but your characters may still lack that which can alone give permanence to powers—the *Grace of Humility*. As the divine Italian at the very entrance to Purgatory was led by his gentle Master to the banks of the island and girt with a rush, indicating thereby that he had cast off all pride and self-conceit, and was prepared for his perilous ascent to the realms above, so should you, now at the outset of your journey take the reed of humility in your hands, in token that you appreciate the length of the way, the difficulties to be overcome, and the fallibility of the faculties upon which you depend.

"In these days of aggressive self-assertion, when the stress of competition is so keen and the desire to make the most of oneself so universal, it may seem a little old-fashioned to preach the necessity of this virtue, but I insist for its own sake, and for the sake of what it brings, that a due humility should take the place of honour on the list. For its own sake, since with it comes not only a reverence for truth, but also a proper estimation of the difficulties encountered in our search for it. More perhaps than any other professional man, the doctor has a curious—shall I say morbid?—sensitiveness to (what he regards) personal error. In a way this is right; but it is too often accompanied by a *cocksureness* of opinion which, if encouraged, leads him to so lively a conceit that the mere suggestion of mistake under any circumstances is regarded as a reflection on his honour, a reflection equally resented whether of lay or of professional origin. Start out with the conviction that absolute truth is hard to reach in matters relating to our fellow creatures, healthy or diseased, that slips in observation are inevitable even with the best trained faculties, that errors in judgment must occur in the practice of an art which consists largely of balancing probabilities;—start, I say, with this attitude in mind, and mistakes will be acknowledged and regretted; but instead of a slow process of self-deception, with ever increasing inability to recognize truth, you will draw from your errors the very

[29] *The Student Life*, by Sir William Osler, edited by Richard E. Verney, Edinburgh, 1957. p. 144.

[30] Ibid, p. 148.

lessons which may enable you to avoid their repetition."[31]

One of the great dangers of our time, I suppose, is nationalism or its abuse, and Osler in one of his essays calls nationalism "the great curse of humanity." The true student should be a citizen of the world—the allegiance of whose soul, at any rate, is too precious to be restricted to a single country. "What I inveigh against," said Osler, "is the current spirit of intolerance, conceived in distrust and bred in ignorance, that makes the mental attitude perennially antagonistic, even bitterly antagonistic to everything foreign, that subordinates everywhere the race to the nation, forgetting the higher claim of brotherhood."[32] He quoted from the *Religio Medici*: "I feel not in myself those common antipathies that I can discover in others; those national repugnances do not touch me, nor do I behold with prejudice the French, Italian, Spaniard or Dutch; but where I find their actions in balance with my countrymen's, I honour, love and embrace them in the same degree. . . . Full knowledge, which alone disperses the mists of ignorance, can only be obtained by travel or by a thorough acquaintance with the literature of the different countries. . . . The great minds, the great works, of literature transcend all limitations of time, of language or of race."[33]

I was glad to read also, being a member of the teaching profession, that Dr. Osler agrees that the function of a university is to teach men to think. Original thinking and outspokenness is sometimes a risky business in our time, but those who have the courage to think for themselves and to write what they think are those who are contributing greatly in preserving the fundamental freedoms necessary in a democracy. With Dr. Osler, I can again but agree that a teacher should have not only a full personal knowledge of the branch he teaches, but also enthusiasm and a sense of obligation to his students. Dr. Osler did value the idealist, many of whom are teachers. He once said, "They alone furnish the Geist that finally animates the entire body and makes possible reforms and even revolutions." Note the calm use of the word "even".[34]

Osler, with a great faith in youth, had the curious idea of the comparative uselessness of men above 40 years of age, particularly of men above 60, when he thought all men should stop work. For the teaching profession he suggested that the teachers should study until they were 25, investigate until they were 40 and teach until 60, then they should be retired on a double allowance. When one sees the enormous industry of men like Sir Winston Churchill and Robert Frost, who are each 85, this theory of Sir William's does not, it seems to me, stand up too well.

At one time Sir William was Walt Whitman's physician and he quotes once with approbation these lines of Whitman,[35] "Ah, the glory of the day's work, whether with hand or brain! I have tried to exalt the present and the real, to teach the average man the glory of his daily work or trade." With Whitman, Osler would quote, "Join the whole creation of animate things and a deep heartfelt joy that you are alive, that you are the sun, that you are in this glorious earth which nature has made so beautiful, and which is yours to conquer and enjoy."

I had a similar feeling about life in 1947 when I was recovering from a severe heart attack. In *The Coronary Club*, a small booklet I wrote concerning this, I said: "Thus illness brought me to a quickened realization that life is good, insecure as it may be, and in spite of the overwhelming evidence of the greed, and stupidity of men on every side. It also brought a sense of humility, a feeling of thankfulness to whatever gods there be, to Nature herself, the Mother of us all, for the manifold blessings one has in this life—the beauty of the sky at night, pines against an evening sky,

[31] Ibid, pp. 10–11.
[32] Ibid, pp. 166–167.
[33] Ibid, pp. 167–168.
[34] Ibid. See chapter: The Foundations of a University Education. pp. 52–63.
[35] Ibid, p. 154.

white birches bending in a breeze, a deer browsing alertly on a Vermont hillside, a rippling trout stream, the majestic sea crashing on our Eastern and Western coasts, white sails against a blue sky at Marblehead or Boothbay Harbor, geese flying south in the fall against a turquoise grey sky—the New York sky line, San Francisco from Sausilito.

> Sea-winds, blown from east and west,
> Blown from the eastern sea, and blown
> from the western sea,
> till there on the prairie meeting."

Osler, as I have already indicated, believed that everybody should collect a library of books. He was, with all his Puckish humor, a man of deep faith. "One should", he said, "begin the day with Christ and his prayer." He also believed thoroughly in knowing and reading the Bible. "At the end of the day, from your bedside library, one should spend the last half-hour in communion with the saints of humanity." Great lessons are to be learned and perhaps even more necessary in our nuclear age, from Job, David, Isaiah, St. Paul, Shakespeare, the Stoics Epictetus and Marcus Aurelius, and from Jowett's great translation of Plato.

Dr. Osler thought that the humanities are the hormones—embracing all the knowledge of the ancient classical world, what man knew of nature as well as what he knew of himself. The deep rooting of our civilization, he often wrote, is in the soil of Greece and Rome, from which comes much of our dogmatic religion, practically all the philosophies, the models of our literature, the ideals of our medical freedom, the fine and technical art, the fundamental sciences, and the basis of our law.

It would be interesting to question the medical students of today to see whether they would agree with Osler's bedside library for medical students. The ten books which he regarded as a necessity were:

1. Old and New Testaments
2. Shakespeare
3. Montaigne
4. Plutarch's Lives
5. Marcus Aurelius
6. Epictetus
7. Religio Medici
8. Don Quixote
9. Emerson
10. Oliver Wendell Holmes

I would agree that most of these would still be indispensable, though perhaps one could give up without too much loss Emerson and Holmes, and perhaps Epictetus and Plutarch.

Summing up his own life which, as we now know, was clouded by the death of his only son, Revere Osler, in August 1917, he noted that his three personal ideals were, and that the secret of success is:

"1. To do the day's work well and not to bother about tomorrow. Let the future take care of itself.
2. The second ideal has been to act the Golden Rule, as far as in me lay, towards my professional brethren and towards the patients committed to my care.
3. To cultivate such a measure of equanimity as would enable me to bear success with humility, the affection of my friends without pride and to be ready when the day of sorrow and grief came, to meet it with the courage befitting a man."[36]

> "I have loved no darkness,
> Sophisticated no truth,
> Nursed no delusion,
> Allowed no fear."

It was a deliberate conclusion of Osler, after a full life, that the law of the higher life is only fulfilled by love, that is, charity, and the essence of it all is expressed in the Gospel of St. Matthew: "For whosoever will save his life shall lose it: and whosoever will lose his life for my sake shall find it."[37]

[36] Ibid, p. 174.

[37] Gospel according to St. Matthew, 16:25.

Health Problems and Social Delinquency[1]

By WILLIAM A. STEIGER, M.D.[2]

ON FEBRUARY 17, 1959, the Section on Public Health, Preventive and Industrial Medicine held a panel discussion concerning "Health Problems and Social Delinquency". The panel members were Maurice E. Linden, M.D.,[3] the Rev. W. Carter Merbrier[4] and the Honorable Randolph E. Wise,[5] with this reporter as moderator. This panel discussion served as further evidence for the increasing awareness by the medical profession of the importance of social factors in health and illness. This cognizance of social and emotional factors by medicine has been demonstrated as well by the increased incorporation of psychiatry into the rest of medicine, by the interest of psychiatry in "Social Psychiatry", by the ever widening horizons of Social Service and by the rapid growth in numbers of behavioral and social scientists on the faculties of medical schools.

In the past, environmental factors have been recognized particularly as important parts of the causal chain in communicable diseases—particularly such ecological factors as housing, sanitation, nutrition, etc. More recently, the association of skid row with a high incidence of pulmonary tuberculosis has been amply demonstrated. Venereal disease, drug addiction, septic abortion, prematurity, neonatal mortality and so on are disorders with increasingly obvious relationships to social, cultural and psychological factors.

It is clearly evident that "good" medicine demands an active interest in these approximate agents of disease and that steps taken towards *prevention* of these disorders should be more efficient than the *therapy* of a large number of these sick individuals.

Beyond this, moreover, our society is currently expanding its definition of what is "sick". Antisocial behavior, for example, which was once a problem for the law and for the church is now being defined as an illness. What was once bad and deserved punishment is now ill and needs understanding! Thus the medical profession, as a segment of society, is being obliged to exert a leadership role in areas of behavioral and social aberrations that extend beyond its more traditional role in biological disorders.

Dr. Linden pointed up the oversimplicity of many attempts to single out the "cause" of delinquent behavior. From the psychiatric viewpoint he elaborated the doctrine of determinism, viz., that personality is *determined* by early childhood experiences. Thus an individual's pattern of action and reaction throughout life is a consequence of childhood relationships to parents and siblings. The family unit is therefore a crucial factor in an individual's attitude towards society, in general, and authoritarian figures, in particular. Extending beyond this is the attitude of the parents towards their children. This attitude is a product of their own childhood and current social, cultural and economic forces impinging on child growth and development. Thus the pendulum has swung from the older, authoritarian, "children should be seen but not heard", attitude to the unrepressed, acting out, child-centered family. While certain gains have accrued from this change, delinquent behavior with its disrespect for authority, its lack of suppression of sexual and aggressive

[1] Report of a Panel Discussion, Section on Public Health, Preventive and Industrial Medicine, College of Physicians of Philadelphia, 17 February 1959.

[2] Associate Professor of Medicine and Director of Comprehensive Medicine Clinic, Temple University School of Medicine, Philadelphia 40, Pennsylvania.

[3] Director, Division of Mental Health, Philadelphia Department of Public Health.

[4] Pastor, St. Matthew's Lutheran Church of Philadelphia.

[5] Commissioner of Public Welfare, City of Philadelphia.

emotions may be a consequence in part of this cultural change. Beyond this is the prolonged economic dependency of the United States teen-aged population on their parents. This is unlike that of many countries where children go to work earlier and thus have a constructive outlet for aggressive drives. It is evident from even this brief discussion that no one discipline can have the "answer" to this multifaceted problem.

From the standpoint of the Church, Rev. Merbrier (voted this year by the Philadelphia Junior Chamber of Commerce as the "Young Man Of The Year" for his work in this area) made several telling points. He emphasized that the role of the church's representative was that of gaining the "heart" (the moral convictions) of those in our society whose moral code is inadequate or non-existent. The ministerial role is not that of a social do-gooder, amateur psychiatrist, or untrained physician. It is that of motivating people to live up to a high moral standard from which both they and society will benefit. To accomplish this the established churches need to select strong leaders and to provide adequate church facilities in lower economic areas. Close cooperation and mutual respect among churchmen, physicians, social agencies and municipal authorities is a must if positive results are to be expected.

Finally, Commissioner Wise outlined some of the problems and the programs of his department. He deplored the difficulty of obtaining the best medical and psychiatric talents in the penological field. He hoped that the recent contractual agreement between the Department of Psychiatry of Temple University Medical Center and the City of Philadelphia for the study and treatment of chronic alcoholics in the House of Correction would set a pattern that would lead to etiological discovery and therapeutic development. He outlined one of his department's experimental programs in a selected neighborhood wherein social workers armed with police authority are seeking out and dealing with "hard core" families that have given rise to multiple antisocial offenders. Thus the program came again to concern with the family, the basic unit of our society.

It is evident that this entire area of "health problems and social delinquency" needs considerably more study. It is an area of many strongly held opinions and relatively few established facts. Also, it is an area in which study and treatment must incorporate cooperation and communication among several disciplines. The panel discussion outlined above served to emphasize this necessary function.

The History of the Resident System[1]

By DAVID M. DAVIS, M.D.[2]

THE great German surgeon Billroth pointed out that as long as the healing art has been practiced it has also been taught—first by speech, then by writings. He remarks, however, that books are not enough; "The student must *see* the *master* diagnose and treat disease."

Throughout the entire history of medicine this urge to teach has never failed. The urge seems to be almost instinctive, yet it is a real necessity if the supply of physicians is to be constantly replenished as it must be, and it is of course constantly stimulated by the desire of young physicians to learn from their elders as much as they can.

The means and methods by which medical instruction has been given have been revised in a kaleidoscopic way through thousands of years. The important thing to record here is that out of all this experience there has come a concept, practically universal, that all who wish to become doctors should receive a broad-based, fundamental, but rather elementary course of instruction leading to the degree of doctor, which entitles its holder to practice. This fundamental course must, however, according to the current concept, be supplemented by further teaching and experience, which may be that of a single year of internship or a period of many years of post-graduate work.

In Egypt, according to Herodotus, "every physician was for one disease", in other words a specialist. Sigerist says that this was also the case in Babylonian, Hindu, Jewish and other oriental medical customs. It is thus very clear that neither specialism nor post-graduate education is an innovation—both have been practiced for hundreds, even thousands of years, and obviously fill unescapable needs. We can scarcely hope, therefore, to abolish specialization or to avoid the need constantly to modify and improve the methods of post-graduate instruction.

In attempting to improve methods one should, first, clearly outline the objective of the methods, second, consider the facilities, both human and material, which are available or can be made available, and third, identify, as well as possible, the psychological factors involved, both in regard to the students and to the teachers. Lastly, in order to improve on the past, we must learn fully what the experience of the past can teach us.

Hippocrates, at Cos, stressed the importance of direct observation in teaching. Advanced pupils were left to observe and attend patients between the visits of the physician—an early example of the process of encouraging and nurturing a sense of responsibility.

The Arabs developed their medical schools in connection with hospitals and one may observe that good ideas utilized in ancient times have often been forgotten and ignored, only to be rediscovered and resurrected with great fanfare at a later date.

As early as 1554 in Vienna, physicians were required by law to work in hospitals. Clinical teaching was inaugurated in 1630 at Leyden, and as a result Dutch medicine and teaching became foremost in the world at that time, with Boerhaave as its principal figure. The Dutch influence spread to Edinburgh, Vienna, Paris and the German Universities. In 1743 the Académie de Chirurgie of Paris granted the degree of Master of Surgery to candidates already possessing the degree of Master of Philosophy—high standards indeed!

Americans in colonial and post-revolutionary days had to go to Europe for any post-graduate

[1] Second Annual Osler Lecture of the Osler Medical History Club of Jefferson Medical College, presented 3 March 1959 before the Section on Medicial History, College of Physicians of Philadelphia.

[2] Emeritus Professor of Urology, Jefferson Medical College, Philadelphia 7, Pennsylvania.

work beyond simple apprenticeship—first to Edinburgh, later to Paris, and finally to the German Universities. Of the products of Edinburgh, Morgan, Shippen, Kuhn, Rush, Wistar and Physick took part in establishing the Medical School of the College of Philadelphia, now The Medical School of the University of Pennsylvania, and Bard provided the impulse for the College of Physicians and Surgeons in New York City.

In those early days certain customs of England and Scotland in regard to graduate instruction were imitated in this country. Young doctors wishing further training were admitted to hospitals under various designations such as "walker", "dresser", "interne", resident, house physician or surgeon, etc., and this began as early as 1791 at New York Hospital and 1803 at Bellevue Hospital. Before 1870 Bellevue had junior and senior "walkers", who were externes, living outside the hospital and serving in it under the house physician or house surgeon, who lived in. Preceptorship with a doctor attached to an active hospital brought some hospital privileges, varying with individual cases. Lack of organized facilities for post-graduate work increased the demand for "quiz-courses" which, often given by those who had been trained in Europe, became popular and numerous in the latter days of the last century. Evolving from these came a few better organized programs of post-graduate instruction in specialties, especially eye, ear, nose and throat, and finally in the 1880's the New York Polyclinic Medical School and The New York Post-Graduate Medical School were founded. Attracting many students, these post-graduate schools had to rely more and more on didactic teaching, and are now, having in a general way failed to accomplish their desired results, in a state of decline.

In analyzing the motives which led to all these varying arrangements for post-graduate work, one finds, on the side of the teachers, three principal ones, first the desire to teach and train young doctors, second, the need for help in routine hospital matters, such as periodic visits, surgical dressings, assistance in operations, night-time care of patients, etc., and third, the desire for financial gain from quiz and other courses, which were very lucrative. On the side of the students, one can discern first, the desire for more and better instruction and experience, second, the hope of acquiring personal and hospital connections which would be valuable in the future, and third, financial considerations, which might be the advantage of receiving board and lodging in the hospital, with perhaps a small stipend very occasionally paid, or, the avoidance of paying for a quiz or post-graduate course.

Similar motives are at work today, and one of our chief problems is the proper distribution of emphasis among them. Let us see how our present and much debated "Resident System" sprang up.

At a time when Nathan Smith Davis, Daniel Drake, Charles W. Eliot and William Pepper were deploring the tragic decline of medical education in the United States, and doing what they could about it, Patrick MacCaulay of Baltimore also talked and wrote of the problem in a most penetrating and prescient way. It happened, most fortunately, that his good friend, and rich Baltimore financier, Johns Hopkins, became deeply interested, and bequeathed the means to found a new medical school and hospital dedicated to the best that could possibly be provided in medical education. The choice of Daniel Coit Gilman to be president of the new university was most fortunate. He chose John Shaw Billings to plan the new hospital, and together they laid the plans for the medical school and hospital. It was remarkable that eighty years ago they not only envisaged graduate medical training, but that their plans for the hospital included "ample living quarters in a dignified setting in the front building of the hospital". Note that the imponderable of "dignity", so often forgotten by modern planners, was provided for by these wonderful pioneering geniuses.

Graduate education began under William H. Welch in the Pathology building in 1886, before either the hospital or the medical school was opened. The hospital was completed in

1889, and at the same moment a graduate resident staff began its work. Canby Robinson says that the "facilities made it possible for a relatively large number of carefully selected medical graduates to live in the hospital and obtain long periods of training, giving them opportunities nowhere else available. These opportunities have always been much prized by the students of the medical school because of their unique advantages for post-graduate training, and winning these privileges has always been a great stimulus to high scholastic standing in the Medical School".

The choosing of the residents and the determination of their plan of work was carried out by Osler and Halsted, influenced largely by their knowledge of the "assistantships" in the German university hospitals. From their statement it is apparent that these original residencies were designed for the training and development of a few young physicians with special interests and abilities who might become professors or men especially competent in one field of medicine.

The numbers first chosen were generous. As time went on, some, either tiring of institutional work or pressed by financial considerations, resigned. Those making the better showings were given more advanced work and responsibilities, the one finally judged best of all becoming "The Resident" in medicine or surgery. The "Resident" could occupy his post as long as he pleased, and his appointment usually led to the resignation of his chief contemporary competitors. One should note the lack of formalism in this scheme, and the careful, deliberate emphasis on the principle of competition.

The limited aim of these first residencies has certainly been attained, as shown by the number of those who, having gone through a Johns Hopkins residency, or through other residencies planned along the same lines, have become professors or have otherwise attained eminence. At the present moment it is instructive to compare the Osler-Halsted statement with more modern statements of the objectives of residency training: "Clinical training, to be truly graduate training, should discipline the resident in scientific attitudes toward health and disease, and should enable the graduate to begin the practice of a clinical specialty in a scientific manner without supervision".

This is a considerable change of view point, and one must inquire what has happened to the residency training concept since 1889. New developments can be considered under three general headings, as follows:

1. The founding of "The Specialty Examining Boards", with their power of certification.
2. Revoking of the ban on marriage for residents.
3. The increase in hospital population due to:
   a. medical and surgical hospital insurance.
   b. pressure from various sources for socialization of medicine.
   c. the explosive increase in general population.

The specialty examining boards have been highly successful in their original aim of requiring a reasonable degree of training and evidence of competence from those who would set themselves up as specialists, but this very success has made the certificate so important that it is sought by many solely for its financial value. Since they must have gone through a residency to become eligible for examinations, present day residencies are, shall we say, encumbered by many who would never have qualified in energy, devotion, or scientific attitude under the original Osler-Halsted requirements.

The other, insufficiently foreseen result of the success of the certifying boards is that every established specialist with a hospital service wants a residency for reasons of prestige. Others want residencies to provide them with assistants without cost to themselves. Possibly as a result of these considerations, in 1955 four-fifths of all approved residencies were in hospitals having no medical school affiliation, and 502 hospitals offered residencies but no internships. All of this suggests that

many residencies are in charge of chiefs with little ability as teachers, many of whom leave all instructional matters to committees or directors of resident education. This results in much formalized, impersonal classroom work, a mere prolongation of grammar-school psychology, with no development of the sense of responsibility or the capacity for judgment and authority. Recently a resident has voiced his views on this subject (Dedmon).

In former years residents had to be single, and devote their entire time to their work. This prohibition of marriage was eliminated between World War I and World War II, but not until the overwhelming craze for early marriage and unlimited procreation struck during World War II did serious effects on the residency system begin. At present many who are well qualified for residencies cannot take them, as they must provide for wives and families. Others, perhaps less qualified, choose residencies on the basis of salaries, quarters and other perquisites offered, rather than on the quality of instruction. This may mean that institutions best able to give good training do not get the best men. Lastly, the demands of wives and children on a resident's time and attention cut down seriously his ability to get the most out of his training.

The increase of hospital population, added to the enlarged needs of the armed services, has caused there to be more residencies offered than there are applicants to take them. This situation means that candidates of inferior qualifications are often accepted, and that suitable and necessary discipline cannot be enforced since if a resident is discharged there is no one to take his place.

As a result of these influences, major changes in the residency picture have taken place. In the pre-World War I era residencies were few, and were all in the hands of men of superb teaching and stimulating ability. All were organized on a so-called pyramidal basis; that is to say that each year some were eliminated, so that the finally successful chief resident was, as has been explained, the survivor of a highly competitive struggle. To drop out of a pyramidal residency before reaching its peak was no disgrace, since all who started in the competition were especially chosen, superior individuals. I have known many so dropping, and while some were no doubt deeply disappointed, I can recall no one of them who did not go on to a successful career in teaching, research or practice.

After all, in our sports we emphasize competition, we lavish admiration on the winner, and we do not waste too much sympathy on the loser, who has made a good fight and is probably all the better for it. Why should it be different in other categories of human endeavor?

With the growing scarcity of applicants for residencies, a very large number of residencies has since 1945 converted to a so-called parallel system, in which the beginner goes through a course of specified length, and is sure of completing his residency, short of committing some really monstrous offence.

In 1950 there were 1079 hospitals with 18,669 resident positions, of which 6% were vacant (at the same time 25% of 9370 internships were vacant.) A year later 1,120 hospitals provided 20,257 resident places of which 25% were vacant, and the internship vacancies had risen to 32%. In 1956 there were 27,835 residency positions in 1211 hospitals. In that year the certifying boards had, since the first board was activated in 1917, certified 63,727 doctors.

The boards themselves, working in harmony with the Council on Medical Education and Hospitals of The American Medical Association, have come to feel that many residencies, although meeting stated requirements as to physical facilities, beds, numbers of teaching personnel, etc., are not providing the type and quality of training the boards would like to see. A number of boards have appointed Committees of Review, to judge and report upon the actual conduct of residencies. Some feel that the approval of the Council should be withdrawn from residencies adjudged inadequate and unsatisfactory; others feel that it would be better to classify and grade residen-

cies, which would afford a continuing stimulus to all lower-graded residencies to improve their standings.

Other thoughts on the subject are that it would be better to have the responsibility for each residency rest on one man, rather than on an institution, especially important in a hospital without medical school affiliations; and that medical schools should take more responsibility for resident training. There is a growing realization that the certificate has brought about a radical change from the pre-board days, when a man got nothing from a residency except what he could carry away in his head. Today some think only of the scrap of paper, and not at all of what may or may not remain in the head. This is indeed a serious problem, and no one has as yet discovered what should be done about it.

From my own experience I would say that training a resident involves three stages. At first the timid, inexperienced beginner must be urged forward, if necessary using whip and spur; in the next stage, as competence develops, over-confidence often appears, and must be curbed with a firm hand. Then as judgment and discrimination grow and improve, good work must be acknowledged, poor work criticized. A proper balance must be kept between clinical work, laboratory work, study and research. One must see that the conscience of the physician grows with his ability, and laziness and irresponsibility must never be tolerated. In the last stages of training authority must be bestowed pari passu with the growth of responsibility—authority over patients, students, interns and junior residents. Only thus can the product of a residency be declared ready to take over whatever may be offered him. All this, as you can see requires constant application on the part of the chief, and this is perhaps the most important element in a good residency.

We have to conclude that the residency, originally conceived as a device to train small numbers of selected, superior men for superior positions has now become part of a system to train the rank and file of doctors—there are even residencies in general practice. Many fear that the decline of high standards may go on to a point where the system will have to be abandoned, but this seems to me an extreme view. As with all other matters in a rapidly changing world, the resident system will have to be subjected to constant review, debate and modification. Failures and weak points must be handled vigorously, and never-ending efforts made to uphold and even improve high standards. If there is no official classification or grading of residencies, the young aspirants will always have their own views as to which residencies are best. Perhaps a periodic publication of facts would be the most practical way to help them in their decisions.

In conclusion, we may refer back to the statement of Billroth quoted in my first paragraph: "The student must *see* the *master* diagnose and treat disease". This brings out the fact that the best residency must be a very personal thing. Obviously, the teacher must be a master, the student must feel that he is watching a master, and contact between them must be constant and enthusiastic on both sides. So will the attention of the student be fixed and strengthened, and at the end his self-confidence and self-reliance will be best served. No lecture rooms or quiz classes can take the place of this.

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Transactions of the Sections

SECTION ON GENERAL MEDICINE

23 February 1959

The Use of the Transistor Pacemaker in Treating Complete Heart Block and Cardiac Arrest. Samuel Bellet, M.D., Otto Mueller, M.D.*, Antonio De Leon, M.D.*, William T. Lemon, M.D., and Larry Scher, M.D.* (Discusser: William Blakemore, M.D.*) (*Abstract* 1, below)

The Differential Diagnosis of Angina Pectoris. Herbert Unterberger, M.D.* (Discusser: Bernard H. Pastor, M.D.*) (*Abstract* 2, below)

The Complete Correction of Mitral Stenosis by Creation of a New Type of Valve. Charles P. Bailey, M.D.*, Dryden P. Morse, M.D.*, Henry T. Nichols, M.D.* (Discusser: Jacob Zimmerman, M.B., B.S.*) (*Abstract* 3, below)

Differentiation of Congenital Interatrial Shunts from Rheumatic Mitral Valvular Insufficiency. Philip Lisan, M.D.*, Daniel Mason, M.D.*, and Gordon Bendersky, M.D.* (Discusser: Jacob Zatuchni, M.D.) (*Abstract* 4, below)

30 March 1959

Novobiocin Jaundice. Rody P. Cox, M.D.*, Elwood L. Foltz, M.D.*, Samuel Raymond, M.D.*, and Richard Drewyer, M.D.* (Discusser: Isadore N. Dubin, M.D.) (*Abstract* 5, below)

When Does Systemic Lupus Erythematosus Begin? Maxwell Scarf, M.D.* (Discusser: Edward H. McGehee, M.D.) (*Abstract* 6, below)

Prophylaxis of Rheumatic Activity: Six-Year Study of 138 Rheumatic Children with Particular Reference to Auscultatory Findings. Daniel Mason, M.D.*, Ella Roberts, M.D., and Margaret M. Milliken, M.D.* (Discusser: Sidney Friedman, M.D.*) (*Abstract* 7, below)

Pyridoxine Deficiency in Congestive Heart Failure. Howard A. Levy, M.D.*, Michael G. Wohl, M.D., and Anton Szutka, Ph.D.* (Discusser: David B. Cousin, M.D.*) (*Abstract* 8, below)

25 May 1959

Preliminary Report on the Work Capacity of Patients with Hypertension and after Myocardial Infarction. Lewis Potgieter, M.B., Ch.B.*, J. E. Schmitthenner, M.D.*, E. A. Daugherty, M.D., and Joseph H. Hafkenschiel, M.D. (Discusser: Hadley L. Conn, Jr., M.D.*) (*Abstract* 9, below)

Plastic Capillary Coagulation Times from Cutaneous Punctures. John B. Atkinson, M.D., John H. Hodges, M.D., Emily Dunn, M.T.*, and Loretta Frisco, M.T.* (Discusser: Harold A. Wurzel, M.D.*) (*Abstract* 10, below)

Hypocalcemia in the Presence of Osteoblastic Metastases: Case Report. Marvin A. Sackner, M.D.*, Alfred P. Spivack, M.D.*, and Lucy J. Balian, M.D.* (Discusser: George D. Ludwig, M.D.*) (*Abstract* 11, below)

An Unusual Manifestation of the Anginal Syndrome. Raymond Penneys, M.D. (Discusser: Louis A. Soloff, M.D.) (*Abstract* 12, below)

SECTION ON MEDICAL HISTORY

3 March 1959

The History of the Resident System[1]. David M. Davis, M.D. (Second Annual Osler Lecture, Osler Medical History Club, Jefferson Medical College; Lecturer introduced by David J. LaFia, M.D., Faculty Sponsor)

* By invitation.

[1] Published in *Transactions & Studies*, October, 1959.

7 April 1959

Rabelais, Sterne and Osler: Companions in Wit[1]. Herbert F. West, A.M.* (Kate Hurd Mead Class of 1888 Lecture in Medical History XI, Woman's Medical College of Pennsylvania).

SECTION ON OPHTHALMOLOGY[2]

19 March 1959

Angiomatosis Retinae: Report of Two Operated Cases. David Seaman, M.D.*

Management of the Patient with Subnormal Vision. Bernard C. Gettes, M.D.

Corticotropin and Corticosteroids in the Treatment of Herpes Zoster Ophthalmicus. Harold G. Scheie, M.D., and Thomas G. McLellan, Jr., M.D.*

16 April 1959

The Problem of Progressive Thyroid Exophthalmos. John W. Henderson, M.D.*

SECTION ON OTOLARYNGOLOGY[3]

21 January 1959

Repair of Facial Nerve Injuries. F. Boyes Korkis, F.R.C.S.*, London, England. (Discussers: George M. Coates, M.D., Oscar V. Batson, M.D., and Frederick Harbert, M.D.)

15 April 1959

(Combined meeting, Section on Otolaryngology, The New York Academy of Medicine, and Section on Otolaryngology, College of Physicians of Philadelphia, held at The New York Academy of Medicine.)

The Lateral Approach to the Larynx and Hypopharynx. Arthur J. Cracovaner, M.D.* (Discusser: Chevalier L. Jackson, M.D.)

Some Aspects of Vestibular Physiology. Gosta Dohlman, M.D.*, Lund, Sweden. (Discusser: Julius Winston, M.D.)

A Further Report on Fenestration of the Oval Window Through the Fixed Stapedial Footplate. Samuel Rosen, M.D.*, and Moe Bergman, M.D.* (Discusser: Frederick Harbert, M.D.)

SECTION ON PUBLIC HEALTH, PREVENTIVE AND INDUSTRIAL MEDICINE

17 February 1959

Health Problems and Social Delinquency: Panel Discussion.[1] William A. Steiger, M.D., Maurice E. Linden, M.D.*, Reverend W. Carter Merbrier*, and Honorable Randolph E. Wise*.

1 April 1959

(Joint Meeting with Pennsylvania Public Health Association, Region One) (College James M. Anders Lecture XXXVIII)

Man in Space—The Medical Problem.[1] Major General Otis O. Benson, Jr., U.S.A.F. (M.C.).

ABSTRACTS

Abstract 1

The Use of the Transistor Cardiac Pacemaker in Complete A-V Heart Block and Cardiac Arrest. Samuel Bellet, M.D., Otto Mueller, M.D., Antonio deLeon, Jr., M.D., William T. Lemmon, M.D., and Larry Sher, M.D.

A small transistorized artificial pacemaker has been devised for use in slow heart rates and cardiac arrest. Extraneous stimulation is controlled through direct application of the electrical stimulus to the myocardium. For this purpose a stainless steel wire is introduced into the myocardium either through the intact chest or under direct vision during thoracotomy. This pacemaker (Atronic Pacer) is a constant current source which will deliver to the patient lead the current indicated by the current-know setting over an extremely wide range of impedances.

* By invitation.

[2] Abstracts of presentations at this Section customarily appear in the *American Journal of Ophthalmology* and the *A.M.A. Archives of Ophthalmology*.

[3] Abstracts of the presentations at this Section customarily appear in the *A.M.A. Archives of Otolaryngology*.

An incorporated galvanometer indicates the actual electrical activation wave of the heart muscle when the function selector switch is set to the monitor position. This gives information as to the regularity, rate and rhythm of the heart. This same galvanometer is used as impedance indicator between the negative and positive electrodes by setting the function selector switch to the impedance position. This will denote satisfactory or unsatisfactory connection to the myocardium.

There are several advantages over the known external pacemakers. It is relatively small, easily portable and readily available for emergencies at all times. It is effective with much smaller currents, which are kept stable by automatic regulation of the voltage. Since the voltage will never exceed 15 volts, the possibility of electrocution is eliminated. Contractions of intercostal or chest muscles are not encountered.

This instrument was tested in 31 animals: 10 dogs with normal sinus rhythm, 15 dogs with complete A-V heart block and 6 dogs with cardiac arrest. The internal pacemaker is a reliable method for increasing the heart rate in the presence of complete A-V heart block or other types of slow cardiac beating. Its value in cardiac arrest is dependent upon the type and cause of the arrest. It is able to initiate effective cardiac contractions (mechanical as well as electrical) in those instances where the periods of cardiac arrest have been relatively short (less than one minute), and where the myocardium has not been unduly depressed by anoxia, hemorrhage, depressant drugs (procaine amide and quinidine), or a high voltage countershock applied to the fibrillating heart. In the latter states, it is best to open the chest and apply cardiac massage, in addition to positive pressure oxygen, in order to attempt initiation of the heart beat. After effective beating of the heart has been maintained from five to ten minutes, the cardiac pacemaker may serve as an effective means of maintaining the heart beat.

The artificial pacemaker will take over if cardiac beating is relatively slow, or generally if the rates are higher than the intrinsic rate of the S-A node. However, when the rate of the pacemaker is close to that of the inherent rate, the artificial pacemaker will act as a parasystolic focus which will produce an effective heart beat only during the responsive period of the cardiac cycle.

Clinically, this internal pacemaker has been used in two human subjects with complete A-V heart block and Adams-Stokes seizures, in one of which the heart beat was maintained for three days and in the other for 8 hours, after which period the inherent rate returned.

Abstract 2

THE DIFFERENTIAL DIAGNOSIS OF ANGINA PECTORIS. Herbert Unterberger, M.D.

This study represents my experience during a twelve year period with over 400 cases of chest pain thought to be of coronary origin. Each of these patients was referred to the angina clinic with the diagnosis of coronary artery disease.

Coronary artery disease often does present itself as the classical anginal syndrome, yet fully 15% of the referrals to the angina clinic were found upon immediate examination not to be angina.

I always prefer positive physical or technical findings to substantiate my impression: for example, the presence of hypertension, a helpful resting electrocardiogram, a positive Master Exercise Test, an abnormal ballistocardiogram, or—as in this case—everything so far mentioned was normal except the vectorcardiogram, which revealed a large anterior myocardial infarction.

Occasionally, it is imperative to obtain positive technical proof of coronary insufficiency, and yet not permit the patient to exercise. This dilemma has been solved by placing the patient in a hypnotic trance and suggesting exertion. The occurrence of ST depression suggests a decrease in coronary blood flow.

Angina can masquerade as something else (equivalents), e.g., dyspnea, sore throat, etc.

There are cases where the most painstaking history and the use of all the technical aids

fail to make it clear whether coronary artery disease is certain to be present.

Certain clinical conditions in the past (e.g., rheumatic heart disease and hepatic cirrhosis) have been thought to be helpful in ruling out angina pectoris. This does not appear to be true.

Angina pectoris can be mimicked by other cardiac diseases not involving the coronary arteries. These include pericardial and myocardial disease, aneurysm of the sinus of Valsalva, syphilitic osteostenosis and dissecting aneurysm.

Angina pectoris may be mimicked by diseases not involving the heart. These include substernal thyroid, mediastinal Hodgkin's, cancer of the lung, pulmonary embolism, pulmonary hypertension, broncholithiasis, pneumothorax, pleurisy, thrombosis of the subclavian artery, herpes zoster, neuroma of the intercostal nerves, Pott's disease, and various rib cage abnormalities. The gastrointestinal system is a common cause of the anginal syndrome. The *most* common cause of the anginal syndrome is anxiety.

It is not the purpose of this paper to decry the diagnostic significance of the clinical syndrome of angina pectoris, but to suggest that before the diagnosis is made, other diseases must be ruled out.

Abstract 3

THE COMPLETE CORRECTION OF MITRAL STENOSIS BY CREATION OF A NEW TYPE OF VALVE. Charles P. Bailey, M.D., Dryden P. Morse, M.D., Henry T. Nichols, M.D., Jacob Zimmerman, M.D., and Joseph F. Uricchio, M.D.

The customary valve mobilization for mitral stenosis which is performed by way of the left auricular appendage provides unquestionable immediate clinical benefit in more than 75% of the operated patients. This has been accomplished over the past ten years at the price of a universally established 7% operative mortality, a 7% incidence of significant (created) mitral regurgitation, and a 6% incidence of arterial embolization. With the passage of time it has become evident that recurrence of the obstruction may be expected in an increasing number of patients.

An intensive review of the pertinent anatomy and physiology of the normal mitral valve and of the pathogenesis and pathology of mitral stenosis has led to some rather startling conclusions: (1) The mitral valve is not a leaflet or cusp bearing valve. Rather it is a "sleeve" valve with an irregular edge and an obliquely truncated base. (2) The closure of this sleeve valve takes place along an eccentric arcuate line which is normally much shorter than the diameter of the original valve "cylinder". (3) Rheumatic inflammation of the mitral valve is limited essentially to a periorificial zone measuring about one centimeter in width. The subsequent fibrosis and contracture of this damaged tissue eventuates in "purse-string" constriction of the orifice. (4) Thus the valve "cylinder" becomes converted into a valve "cone" or "megaphone". Commissure formation due to cross-adherence of apposed portions of the valve margin along the diminutive arcuate line of closure is but an incidental and fortuitous development, found in no more than 50% of stenotic valves. (5) Commissurotomy, even when fully and ideally performed, can only accomplish a transverse division of the fibrosed apex of the cone. This results in a fissure-like opening which is but a small fraction of the caliber of the original valve cylinder. (6) Since the narrow mural portion of the valve sleeve usually will be involved totally, being within the width of the zone of inflammation it will have been converted essentially into a rigid arcuate shelf incapable of further mobility. The longer septal portion of the sleeve, while fibrosed and thickened for an equal distance, will still be uninvolved in its middle and basal zone.

It has been found possible, by using a new principle of valve mobilization, to create a well supported tongue-like "septal leaflet" which, being hinged at its flexible base, will swing like a trap-door providing a flap-valve action comparable to that of the single mitral valve of the turtle. The opening of the valve thereby

created amounts to a longitudinal section of the valve megaphone and is of the same order of size as the original orifice of the valve cylinder.

It is felt that this type of valve mobilization is performed best and with maximal safety by combining a right sided approach and a closed technique with subtotal circulatory bypass.

Abstract 4

DIFFERENTIATION OF CONGENITAL INTERATRIAL SHUNTS FROM RHEUMATIC VALVULAR INSUFFICIENCY. Philip Lisan, M.D., Daniel Mason, M.D., and Gordon Bendersky, M.D.

Surgical repair of interatrial septal defects has now become a reality with negligible operative mortality and complete elimination of this vascular shunt. Therefore it becomes mandatory to establish an exact diagnosis of this congenital lesion alone or in combination with rheumatic mitral valvular disease. Differentiation of congenital interatrial septal defects from mitral insufficiency can be difficult and confusing at times. A review of the classically-described clinical picture is therefore warranted, and this compared to a study of cases confused with mitral disease.

The classical historical events, physical examination, electrocardiogram, roentgen and special techniques are reviewed for mitral insufficiency and interatrial septal defects.

A review of 90 cases of interatrial septal defect were examined and since rheumatic activity rarely occurs before the age of 6, 28 cases were eliminated. Of the remaining 62 cases, there were 20% (16) who had reliable history of rheumatic fever. Out of the latter group, seven selected and well-studied cases were summarized. The essential points were as follows:—

1. Mean age—39 years.
2. Rheumatic activity—2–30 years.
3. Cardiac failure in 4 cases.
4. Systolic murmur heard at apex in 5 cases.
5. Mid late diastolic murmur in 5 cases.
6. PA enlarged in all; absent LA except in Lutembacher syndrome and ostium primum.
7. Plethora of lung fields.
8. RSR′ in lead V1 and left axis deviation in ostium primum on ECG.
9. AF present in 2 cases.

All seven cases had been diagnosed for years as mitral insufficiency with other lesions. Later they were proven by right heart catheterization, operation or post mortem (2 cases), to be interatrial septal defects. There were 2 Lutembacher's, one ostium primum, and 2 cases with anomalous pulmonary venous drainage.

Abstract 5

NOVOBIOCIN JAUNDICE. Rody P. Cox, M.D., Elwood L. Foltz, M.D., Samuel Raymond, M.D., and Richard Drewyer, M.D.

The clinical use of novobiocin is increasing because of its effectiveness in treating staphylococcal infections. Toxic reactions to novobiocin include mild diarrhea, skin rashes, eosinophilia, gastrointestinal irritation with nausea, and leukopenia. During novobiocin therapy a yellowish discoloration of the skin and sclera occasionally appears. This pigmentation is believed to be a degradation product of the drug and not related to hepatic dysfunction. The only previous clinical report of hepatic dysfunction following novobiocin was made by Bridges, Berendes, and Good in 1957. They described a complicated case of a collagen disease with bacteremia in which hepatic necrosis occurred. They concluded that the severe hepatitis might be due to novobiocin.

We recently observed a 25 year old intern with a staphylococcal abscess of his right ring finger. He took only 4.5 Gms. of novobiocin in a three day period but developed a golden color of the skin and sclera. Laboratory studies revealed an elevated bilirubin of which 95% was unconjugated bilirubin and an elevated bromsulfalein retention. No other abnormality of hepatic function was detected.

The pigment present in the serum was identified as bilirubin when it failed to be extracted by chloroform as is the novobiocin lipochrome.

Absorption spectra of serum specimens from the patient had identical spectra when compared with serum from jaundiced patients. The absorption maxima at 455 in all the sera were proportional to the amount of bilirubin present.

Appropriate studies failed to reveal any evidence of hemolysis. There was no previous history of jaundice and liver function tests performed one year previously when the patient was a subject for a drug study were completely normal.

The serum bilirubin fell to the normal range within six days of discontinuing the drug. A bilirubin and repeat bromosulfalein were normal one month after the above episode.

Abstract 6

When Does Systemic Lupus Erythematosus Begin? Maxwell Scarf, M.D.

Systemic Lupus Erythematosus (S.L.E.) has a variegated clinical picture, frequently running a rapidly fatal course. Sometimes, however, its pace is leisurely and protracted, albeit punctuated by violent episodes that are life-threatening. These episodes may differ from each other symptomatically, and be separated by intervals so long that a unifying thread among them may not be clearly discernible.

The marked chronicity shown by 5 of 27 patients with proven S.L.E. recently reviewed was emphasized by a brief clinical portrait of each. Emphasis was placed on the necessity for taking painstaking histories in order to approximate closely the starting point of the disease. Every historical event adds meaning to the present.

The first case was a white woman who had 9 hospital admissions during the past 11 years, each for a serious or critical episode, and each ending with a complete or partial remission. One hospitalization was caused by a febrile polyneuritis with bilateral foot drop, from which she ultimately recovered. Another was due to a brain syndrome incident to a cerebral vasculitis, from which she also recovered. Her 11 year history was probably extended by 5 years when it was learned she had been treated for photosensitive skin lesions at that time. L.E. cells have been present for 3 years.

The second patient also had 9 hospital admissions, each time for pleuropulmonary involvement, either a pleuritis with or without effusion, pneumonia, plate-like atelectasis or pleuropericarditis, over a period of 24 years. L.E. cells have been present for 7 years. She is still living.

The history of the third patient went back 16 years, during which some typical manifestations of S.L.E. were seen. Six years before that (22 years ago), she was treated for syphilis. If her Wassermann was biologically falsely positive, which, according to our present knowledge, is probable, then the duration of her disease is even longer.

The 28 year old woman who was case number 4, presented symptoms of psychoneurosis, low grade fever, and weakness. Fainting spells made their appearance several years later. Angina pectoris on effort with low T waves in on ECG followed. L.E. cells were found one year ago, 6 months after a butterfly rash appeared. Her known history was 11 years, but it was exceedingly difficult to establish the exact time of onset because of the vagueness of her initial symptoms.

The 22 year old boy who was the subject of the next discussion had a florid case of S.L.E. with a known history of several "collagen" diseases since age 8 (Rheumatic fever, Still's disease). He had a reversed serum albumin-globulin ratio. Interest in the case was increased when it was found that his 39 year old mother, hospitalized for study of a Raynaud's syndrome, also showed a reversal of the albumin-globulin ratio. This led to speculation about familial or hereditary hyperglobulinemias and their role in the production of this disease, as reported by others.

Abstract 7

Prophylaxis of Rheumatic Activity: Six-Year Study of 138 Rheumatic Children with Particular Reference to Auscultatory Findings. Daniel Mason, M.D.,

Ella Roberts, M.D., and Margaret M. Milliken, M.D.

This report deals with the prophylaxis of rheumatic activity in 138 previous in-patients of a hospital. All clinical and laboratory manifestations of rheumatic activity were absent at the time of the patient's discharge from the hospital to the follow-up clinic, and each patient was initially placed on daily and prophylactic therapy. Very careful follow-up regarding faithfulness to therapy was observed.

Of these patients, 103 took penicillin daily; 8 took sulfadiazine (allergic to penicillin); 1 took 100 mg. of Achromycin (allergic to penicillin and sulfa); 13 took medication only intermittently; and 13 took none. Three patients were allergic to both oral penicillin and sulfa.

Of the entire group, there were 6 recurrences of rheumatic activity and 2 were questionable; only 1 was in the prophylactic penicillin group.

Careful analysis of the changing auscultatory findings in the entire group was noted. Of interest was the increase from 14.7 per cent of potential heart disease patients in June 1952 to 30.6 per cent as of June 30, 1958, with a decrease in the number of patients with mitral and aortic valvular murmurs. In the prophylactic therapy group, however, there were some patients who developed additional auscultatory abnormalities despite absence of clinical signs of rheumatic activity.

Abstract 8

Pyridoxine Deficiency in Congestive Heart Failure. Howard A. Levy, M.D., Michael G. Wohl, M.D., and Anton Szutka, Ph.D.

Previous studies in our laboratory have demonstrated that a thiamine deficiency exists in patients with congestive heart failure due to organic heart disease. In order to determine whether pyridoxine deficiency occurs in these patients as well, tryptophan load tests were done before and after a 50 mg. therapeutic dose of pyridoxine; the levels of xanthurenic acid in a twenty-four hour urine collection were used as an indication of the extent of the deficiency. Xanthurenic acid was measured by a modification of the method of Rosen et al.

Patients were placed on a standard 1.0 gram sodium chloride hospital diet known to contain an average of 2.0 mg. of pyridoxine daily. In addition, they were given 10 mg. of thiamine HCl and 5 mg. of riboflavin daily, since coenzymes containing these vitamins are known to be involved in the metabolism of tryptophan. Controls consisted of 20 patients hospitalized for other disease processes in the same age range as the 20 patients with heart failure. These included hypertensive cardiovascular disease, rheumatic heart disease, and arteriosclerotic heart disease. Signs of overt malnutrition or undernutrition were noted only in two patients in the control group.

In the control group, the 24 hour urinary xanthurenic acid rose from 5.5 mg (1.0–12.1) to 7.3 mg. (2.7–12.9), and after pyridoxine, to 4.0 mg. (1.8–7.5). Patients with heart failure rose from 4.7 mg. (1.3–11.6) to 40.0 mg. (11.3–109.5), and then fell to 8.8 mg. (2.9–19.0) after pyridoxine.

These results strongly indicate that a deficiency of pyridoxine exists in these patients which is quickly corrected by a therapeutic dose of this vitamin.

Abstract 9

Preliminary Report on the Work Capacity of Patients with Hypertension and after Myocardial Infarction. Louis Potgieter, M.B., Ch.B., J. E. Schmitthenner, M.D., E. A. Daugherty, M.D., and Joseph H. Hafkenschiel, M.D.

The fitness of a patient recovering from an acute myocardial infarct varies with age, previous training, psyche, and the disease process, and should be adjusted to the level of the physical activity to be undertaken as convalescence proceeds. The physician uses his experience, powers of observation, and decides on the basis of clinical judgment when to increase the work load as the patient is prepared for his eventual return to work. Factors which reduce the accuracy of clinical impression are an unsatisfactory physical activity history,

failure to evaluate the patient's emotional status, excessive limitation of physical activity by the patient or physician, too recent convalescence or other disease. Much depends upon the patient's subjective reaction.

There is a paucity of information on a comprehensive assessment of cardiopulmonary parameters during increasing work loads in patients six weeks to six months after an acute myocardial infarction episode. Our study is an extension to humans of an inquiry attempting to assess how the myocardium adjusts coronary blood flow and left ventricular arteriovenous metabolite differences when left ventricular work is increased. In this instance, we were curious to know something of over-all ventilation and circulation adjustments taking place in patients when they exercised. The exercise load was selected to be comparable to the physical activity prescribed as the individuals were ambulated more and more prior to and soon after discharge from the hospital.

The treadmill exercise test of Bruce was selected as an estimate of a "steady rate" work capacity. We set out to compare "sick" male patients and "healthy normal" but untrained male colleagues of comparable age and weight. Because the normals were found to tolerate a higher work load, a group of "healthier patients," males with mild primary hypertension, were tested at this higher work load. Measured were respiratory minute volume, oxygen extracted from the inspired air, total oxygen consumed and carbon dioxide produced, blood pressure, heart rate and precordial electrocardiograph "at rest," either sitting or standing. After five minutes of exercise, these measurements were repeated over a two-minute period. Work load for the postinfarction patients was 370 kilogram meters per minute and the speed of the treadmill belt was individually adjusted depending upon the patient's weight, keeping the grade at 10%. The work load for the hypertensives was 550 kilogram meters per minute.

The tests were performed on 8 normals average age 44 (46 observations), 4 hypertensives average age 50 (6 observations), and 3 postinfarction patients average age 49 (6 observations).

Each individual was studied twice, the second observation showing acceptable reproducibility. Work was performed by the normals at two different loads and showed a linear response of oxygen consumption, respiratory minute volume and heart rate within the 300 to 600 kilogram meter per minute range. Selected patients were repeated at higher work loads and showed a comparable response.

Dipolar (CR) electrocardiographic monitoring (oscilloscope) was continuous during the exercise and was made possible by grounding patient to treadmill, treadmill to recorder, and recorder to ground.

The normal "resting" male was found to utilize 4.0 ml. oxygen per kilogram and to have a net mechanical efficiency of 16%. At this efficiency, this is equivalent to 100 kilogram meters per minute work and represents his "ready for action" energy level. Patients were found to have an efficiency of 15% and were more comparable to the "normals" than trained athletes similarly tested (23%).

These work loads increased the oxygen consumption three to seven times the "resting" level. By extrapolation of all results to an equal oxygen consumption of 1.5 liters per minute, the three groups can be compared. This shows: 1) similar "resting" levels of all parameters, 2) similar net mechanical efficiency, 3) striking heart rate differences, 4) striking increase in pulse pressure as well as heart rate by hypertensives.

The continuous monitoring of the QRST segment showed a marked negative ST segment displacement in one of the postinfarction patients after about five minutes of exercise at a time when he had no sense of substernal distress. The test was immediately terminated and no untoward result ensued.

If an estimate of cardiac output can be made from the product of pulse pressure and heart rate, the trend in the hypertensives is to have a faster heart rate and a higher pulse pressure. This suggests an increased cardiac output and perhaps a decreased peripheral

oxygen extraction with exercise. The post-infarction patient has at a lower level an even faster heart rate, but decreased pulse pressure so that cardiac output is not appreciably changed. The peripheral extraction of oxygen is either unchanged or less than the observed response of the "normals" to this increase in work load.

Thus from these preliminary observations we believe we have found: 1) a practical exercise test, 2) that patients can tolerate walking for 10 minutes at 1.5 to 3.0 miles per hour on a 10% grade, and 3) that the heart rate response is an important index to the individual's adjustment.

Continuous electrocardiographic monitoring has disclosed that ST segment changes do become apparent before the patient complains of substernal distress. Because this QRST change is considered to be an unfavorable symbol of "coronary flow adequacy" during exercise, the test is terminated immediately.

Patients who are highly motivated have responded well to the prescription of an increasing work load following a test, performing these augmentations with greater confidence. This study has suggested that objective evaluation and re-evaluation of cardio-pulmonary function helps the physician by better informing us how to bring the patient in graded steps from the inactivity of the hospital bed and the partial activity of convalescence to the activity which he can perform safely as he returns to work.

Abstract 10

PLASTIC CAPILLARY COAGULATION TIMES FROM CUTANEOUS PUNCTURES. John B. Atkinson, M.D., John H. Hodges, M.D., Emily M. Dunn, M.T., and Loretta Frisco, M.T.

The faults and deficiencies of routine coagulation studies are well recognized and documented. A clinical history of an individual's ability to meet a challenge to the coagulation mechanism, such as surgery, is the one single most important factor in any evaluation. The failure of routine coagulation studies to detect all abnormal individuals, particularly the milder hemophilic defects, is well known. This is particularly true when glass capillaries are utilized for the determination of coagulation times. Nevertheless, the converse is true and routine coagulation studies, properly carried out, will often pick up individuals with significant abnormality who are thought to be normal on a clinical basis.

In an effort to secure a more reliable and more practical method of determining coagulation time on the basis of finger-puncture blood, plastic capillary tubes were used. Suction is required to draw the blood into the tubing. The end point is failure of the column of blood to move due to the induced viscosity from blood coagulation. In 204 individuals, normal by history and by other methods of determining coagulation time, values between 8 and 18 minutes were found to encompass 93% of the group.

In preliminary evaluation of some 100 abnormal coagulation states, most of which were patients on Dicoumarol therapy, this method was found to be efficacious and detected the abnormality as often as the Lee-White method.

Additional evaluation of the use of this plastic (Teflon-$\frac{1}{32}$ of an inch internal diameter) tubing is being carried out. Venous blood is being evaluated using capillary tubing instead of glass or silicone coated tubes. As a corollary to this study, with some indications of success, clot retractions are being evaluated microscopically. Correlation with gross clot retraction appears to be satisfactory to date. It is hoped that these methods, in regard to coagulation times and to clot retraction studies, would be of particular value when repeated determinations are required in a given clinical situation, in particular in pediatrics where, in the younger children, venipunctures often are quite difficult.

Results to date appear to warrant further investigation of this method.

Abstract 11

HYPOCALCEMIA IN THE PRESENCE OF OSTEOBLASTIC METASTASES: CASE REPORT. Mar-

vin A. Sackner, M.D., Alfred P. Spivack, M.D., and Lucy J. Balian, M.D.

A hitherto infrequently recognized abnormality is the occurrence of hypocalcemia in patients with osteoblastic metastases. Although calcium levels are usually normal in this situation, it is believed that excessive osteoid tissue, stimulated by the tumor, may take up sufficient calcium to lower serum concentration.

A 56 year old male, admitted with seizures, had extensive osteoblastic metastases secondary to adenocarcinoma of the lung. Over ten weeks of observation, the serum calcium ranged from 7.4 to 8.2 mg. per 100 ml. His hospital course was uneventful except for the development of a persistent, generalized scaly eruption and a bout of mild congestive heart failure.

Factors known to produce hypocalcemia, such as deficient calcium intake, avitaminosis D, steatorrhea, acute pancreatitis, hypoproteinemia and renal disease were excluded in our patient. Associated with the hypocalcemia were hyperphosphatemia, hypocalcuria, and hypophosphaturia. The serum alkaline phosphatase was normal to slightly elevated in spite of extensive osteoblastic activity. These biochemical alterations suggested the diagnosis of hypoparathyroidism which was substantiated by tests of phosphate clearance, per cent tubular reabsorption of phosphate and intravenous calcium tolerance. There was a tremendous avidity for calcium as indicated by the 24 hour excretion of 26 mg. of calcium after intravenous administration of 1 gm. of calcium as calcium gluconate.

As mentioned above, it is possible that the hypocalcemia was due to increased uptake of calcium by the excessive osteoid tissue; however, the metabolic studies were consistent with hypoparathyroidism. The causes for the hypoparathyroidism can only be speculated upon. We thought that continued stimulation of the parathyroid glands to maintain a normal serum calcium in the face of rapid deposition of calcium into the skeleton might lead to parathyroid exhaustion. This would be analogous to the experimental diabetes produced in cats after continuous stimulation of the pancreas by hyperglycemia. An alternate explanation for the chemical picture of hypoparathyroidism would be the production of a substance by the tumor or its metastases which inhibited the peripheral action of parathyroid hormone.

Abstract 12

AN UNUSUAL MANIFESTATION OF THE ANGINAL SYNDROME: CASE REPORT. Raymond Penneys, M.D.

A 53 year old male patient was seen on several occasions over a period of 5 years. When first seen he had retrosternal pain relieved by nitroglycerine, but because the pain came on only while asleep and not on exertion, it was not believed to be angina pectoris. The only abnormalities on physical examination were a slightly elevated blood pressure and some left ventricular enlargement by x-ray. Electrocardiograms were normal on every occasion until one day marked RS-T elevation in the chest leads was noted (V1, 2 mm., V2, 4 mm., V3, 8 mm., V4, 5 mm.). It was felt that this RS-T elevation resulted from an acute myocardial infarction. He returned the next day, before we were able to get in touch with him and advise hospitalization, and volunteered the information that while this last electrocardiogram was being taken (in the recumbent position), he happened to have one of his usual chest pains. This time, however, he allowed the pain to disappear spontaneously because he did not have nitroglycerine at hand.

We then suspected that we had "caught" him during a spontaneous attack of angina. This was corroborated when another electrocardiogram was taken and found to be normal.

That pain present at rest and accompanied by an RS-T elevation was a unique type of angina was not appreciated by us until recently when Prinzmetal described a "variant" form of angina pectoris in a small group of patients (American College of Physicians,

Chicago, April, 1959). These patients also showed the following features: a negative exercise test for coronary artery disease; relief of angina by Arlidin (Nylidrin), an epinephrine-like drug which increases cardiac output and vasodilates skeletal muscles; incorrect diagnosis of psychoneurosis, because of the atypical pain, or incorrect diagnosis of myocardial infarction because of the RS-T elevation. Half of Prinzmetal's patients subsequently suffered a posterior myocardial infarction. Our patient, when recently re-examined, however, showed no evidence of having had an infarction. In fact, he stated that his pains had lasted only a few months and that he was now back at full-time work doing fairly heavy manual labor.

This type of anginal syndrome is being diagnosed with increasing frequency and may well account for a significant number of patients having transient chest pains at rest. It raises some doubts as to the generally accepted mechanism of angina pectoris, as resulting from a relative ischemia of the myocardium when the blood flow requirement is increased by stresses such as exercise.

College Notes

NEW FELLOWS

The following were elected Fellows on the dates listed:

4 February 1959

Henry A. Arkless
Elmer J. Elias
James F. Toole

4 March 1959

Irvin M. Gerson
Marion S. Fay, Ph.D. (Honorary)
R. Robert Tyson

1 April 1959

John S. Cowan (Non-Resident; Captain, Medical Corps, U.S. Navy)
Kalman Frankel
Martin M. Mandel
Joseph Medoff
Robert C. Mitterling
Arthur H. Thomas

13 May 1959

John H. Moyer

Francis H. Hoffman

CANADIAN MEMORIAL TO R. TAIT McKENZIE

The Mill of Kintail, summer home and studio of the late Dr. R. Tait McKenzie, near Almonte, Ontario, has recently been restored as a memorial to this great physician-artist. The restoration of Kintail Mill, built in 1830 and now recognized as an historic site by the Ontario government, was described by its present owner, Major James F. Leys, in his article, "The Life of a Remarkable Man", which appeared in the *Canadian Army Journal* for January, 1955. Major Leys will welcome pertinent memorabilia for the McKenzie Museum.

Son and grandson of Scottish Presbyterian ministers and their courageous wives, Robert Tait McKenzie was born in 1867 in Lanark County, Ontario—near the old mill which now recalls his life and work. After classical and medical education at McGill University (he received his M.D. degree at McGill in 1892), Dr. McKenzie worked in anatomy and physical education at his *alma mater* until coming to Philadelphia as Head of the new Department of Physical Education at the University of Pennsylvania in 1904. From that time until his death in 1938, Tait McKenzie counted Philadelphia as his home. His monograph, *Reclaiming the Maimed—A Handbook of Physical Therapy*, (1918), a wartime work, was an early classical contribution to the field of physical therapy and rehabilitation. Elected a Fellow of the College of Physicians of Philadelphia in 1905, he was Chairman of its Section on Medical History in 1936–38.

A sculptor of renown, McKenzie's works are admired here and abroad. Locally, his statues of "Franklin Entering Philadelphia", (University of Pennsylvania), "Alma Mater" (Girard College), "Memorial Altar" (Church of the Saviour), "Over the Top" (Radnor War Memorial), and "The Victor" (Woodbury, New Jersey), are well known. His masterpieces, "The Call—1914", in Prince's Street Gardens, Edinburgh, and, "Blighty", at Balmoral, in Scotland, and "The Homecoming", at Cambridge, England, recall his kinship with Britain. (He served with distinction as Major, Royal Army Medical Corps, during the First World War). In his native Canada, sculptured war memorials by McKenzie may be seen today at Almonte, Ottawa, and Toronto. Medallions and bas-reliefs of medical heroes, many his personal friends, are treasured in Philadelphia, Baltimore, and other cities.

For the interested reader, Dr. McKenzie's talk, "Compensations at 70", and a posthumous memoir by Dr. Edward B. Krumbhaar, appeared in *Transactions & Studies of the College of Physicians of Philadelphia* for December 1938. These articles recall a distinguished man whose memory will be kept

ever fresh by those who have profited from his labors.

NECROLOGY

W. A. Newman Dorland

William Alexander Newman Dorland, distinguished senior Fellow of this College, died in 1956 at the age of 92. Like the few other nonagenarians who have recently passed from our ranks, Dr. Dorland lived beyond the age of his peers, but he left a record and name esteemed by all.

W. A. Newman Dorland was born at Hilton Head, Beauford County, South Carolina, on December 26, 1864. His parents were Dr. William Mathews and Sarah Ann (Thorne) Dorland, of old American stock. The son received his M.D. degree from the University of Pennsylvania in 1886, then served as Resident Physician at the Philadelphia Hospital, Blockley, during the following year. In 1887 he was a founder of the Association of Residents and Ex-Residents of the Philadelphia General Hospital—still a flourishing organization. While in medical school and at Old Blockley, Dorland was a pupil and colleague of Dr. William Osler, when the latter was Clinical Professor of Medicine at the University of Pennsylvania from 1884–89.

Dr. Dorland served as an Instructor in Obstetrics at the University of Pennsylvania, and as Associate Professor of Obstetrics and Gynecology at the Old Polyclinic Hospital, in addition to private practice in Philadelphia from 1892–1910. In the latter year he moved to Chicago as Professor of Obstetrics at the Chicago College of Medicine and Surgery (now part of Loyola University); he held this chair from 1910–1919. In 1913 he was appointed Professor of Obstetrics and Gynecology at the Illinois Post-Graduate Medical School in Chicago, and Visiting Obstetrician to Cook County Hospital—holding these positions until his retirement in 1932. Also in 1913, Dr. Dorland became a founder of the American College of Surgeons. He served as President of the Chicago Gynecological Society in 1926–27, and was an early Diplomate of the American Board of Obstetrics and Gynecology.

Best known to the profession in general, however, was his groundwork for a solid book, *Dorland's Illustrated Medical Dictionary*, now in its 23rd edition. The steady growth in size and usefulness of this book during the past fifty-nine years has mirrored its author's scholarship. First issued in the year 1900, *The American Illustrated Medical Dictionary*, as it was originally called, carried Dr. Dorland's name as senior author through twenty-two editions. In 1957, the W. B. Saunders Company of Philadelphia, consistent publishers of this volume, renamed the 23rd edition of that year in honor of its originator. Dr. Dorland also guided *The American Pocket Medical Dictionary* through numerous editions, wrote a textbook, *Modern Obstetrics*, and many other books, literary and scientific articles during his busy professional career. He was for some years a member of the Committee on Nomenclature and Classification of Diseases of the American Medical Association.

Dr. Dorland was elected a Fellow of the College of Physicians of Philadelphia on October 6, 1897, and retained this membership throughout his lifetime. His regard for the College was manifested in part by his donation to the library of several large scrapbooks documenting his career. He served as an Army medical officer during World War I and rose to the rank of Lieutenant Colonel in the Reserve. A member of the Union League of Philadelphia and the Pennsylvania Society Sons of the Revolution, he served as Governor General of the Pennsylvania Society, Order of Founders and Patriots of America, in 1938–40. In recent years Dr. and Mrs. Dorland lived in retirement at Tampa, Florida. His wife, Katharine Keehn Dorland, survived him.

Dr. Dorland died in the Veterans Administration Hospital at Bay Pines, Florida, on September 11, 1956, from a ruptured arteriosclerotic aneurysm. He was buried in Arlington National Cemetery, Virginia. His death deprived the medical profession of a scholarly physician whose influence transcended his long and useful life.

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Historical Aspects of the Development of Live Virus Vaccines in Poliomyelitis[1]

By HILARY KOPROWSKI, M.D.[2]

TODAY when scientific genius has extended man's intellectual control far beyond the horizons of this planet, it somehow does not seem quite *à propos* to discuss an infection which, so far as we know, affects the population of only one of the planets and causes illness in only a very small fraction of this population. However, the Committee of the College of Physicians of Philadelphia, who have greatly honored me as a recipient of the Alvarenga Prize, suggested that I should consider vaccination against poliomyelitis as a likely topic and, acquiescing to their demands, I have decided to trace tonight the history of the development of live polio vaccine.

"History" is one word in the lexicon of all languages which is subject to constant misinterpretation. Hegel was probably right when he said that we learn from history that men never learn anything from history. And there is Fabre's aphorism: "History records the names of royal bastards, but cannot tell us the origin of wheat." I do not intend to lecture about "royal bastards", but perhaps one should remark in passing that the relation between a virus disease and legitimate royal offspring was of great importance to the history of France. The younger son of the Duc de Bourgogne, grandson and heir to the throne of Louis XIV, had the opportunity to become Louis XV because his governess was able to hide him when he had measles, thus saving him from treatment by the Royal physicians, whose ministrations had already dispatched to the other world his mother, father and older brother, all of whom had suffered from the same malady (1).

Although I am not qualified to discuss "the origin of wheat", I shall attempt to trace the origin of live poliomyelitis vaccine. In doing so I shall be obliged occasionally to dispel certain myths and make sure that the legends and parables surrounding these myths are not substituted for history. I shall do my best to do justice to historical facts, though I am afraid there are some who stand ready to reinstate the myths which I shall dethrone tonight. The statement of Ludwig Wittgenstein, the eminent 20th Century philosopher, "Der Philosoph behandelt eine Frage wie eine Krankheit" (The philosopher's treatment of a question is like the treatment of an illness), will dictate the method of my lecture.

[1] Alvarenga Prize Lecture XIX, College of Physicians of Philadelphia, 7 October 1959.

[2] Director, Wistar Institute of Anatomy and Biology, Philadelphia 4, Pennsylvania.

THE DAWN

On March 15, 16 and 17, 1951, the then National Foundation for Infantile Paralysis called a roundtable conference on immunization against poliomyelitis to be held in Hershey, Pa. During the meeting I was asked by the chairman of one of the sessions, Dr. John Paul, whether I had any data to present at that time. I shall now quote verbatim the first few paragraphs of my reply:

"The data I want to acquaint you with represent a summary of clinical trials based on oral feeding of children with TN strain of polio (living virus). Properties of this strain were summarized yesterday.

"The TN strain was used at two cotton rat passage levels: 1st to 3rd and 32nd to 35th. If later we have more time I will summarize on the blackboard experimental data of intracerebral inoculation of animals with pools used for feeding purposes. Twenty children and 2 adults were fed the TN virus and 9 of these received material stemming from the 32nd and 35th cotton rat passage level. The LD_{50} titer in mice of the inoculum ranged from $10^{-3.1}$ to 10^{-4}. Material used for feeding consisted of 10 cc of 20% suspension of cotton rat brain and cord infected with TN strain. In many instances the infectious material was mixed with milk and 5% glucose or chocolate milk and sometimes it was given on a spoon.

"Stools were collected from individuals who were fed virus on the 4th–6th day, the 7th–9th day, the 17th–19th day and the 20th–23rd day."

In the continuation of the report, emphasis is placed on the fact that all of the 18 non-immune subjects, who remained symptom-free, developed antibodies against Type II virus as a result of the feeding. In the same report I mentioned two Type II immune individuals, neither of whom excreted the virus after feeding and whose levels of antibodies remained the same. This was the first public disclosure of oral administration of living attenuated poliomyelitis virus to a human being, an event which actually took place on February 27, 1950, when a 6-year-old boy who had no antibodies against Type II virus was given—by Dr. Jervis, Mr. Norton and myself—an emulsion which tasted like cod liver oil and was in reality a suspension of cotton rat cord and brain tissue which had been infected with approximately 3 million mouse lethal doses of the TN strain (named after my associate Mr. Thomas W. Norton, who participated actively in the work on the attenuation of this virus). This boy was the first human subject, anywhere in the world, to be fed live attenuated poliovirus for immunization purposes. He was subjected to carefully controlled clinical and laboratory observation, which revealed that intestinal infection with the virus had been established, without any signs or symptoms of illness. Blood drawn 15 days after oral administration of the TN strain revealed the appearance of specific neutralizing antibodies, but we waited 44 days before feeding another Type II non-immune subject. Following the uneventful period of clinical observation and the development of antibodies in the presence of the intestinal carrier state, virus of the same strain was administered orally to 18 children, bringing the total number to 20 (2). This represented the first successful trial of immunization of man against poliomyelitis. Because of its nature, knowledge of this trial was at first confined to Dr. Jervis, Mr. Norton and myself. No one else knew of the study during the period between February 27, 1950, when the first child was fed the virus and late January 1951, when observation of the first series of 20 subjects was nearing completion and preliminary evaluation of the procedure indicated that it was harmless. Following completion of this first phase of the study two employees of Lederle Laboratories, where the laboratory part of the study was conducted, were fed the TN strain. One, my associate Mr. Thomas W. Norton, was fed the virus on January 16, 1951 and the other, Dr. Herald R. Cox, was fed the virus on March 2, 1951.

THE CERYNEIAN HIND

To compare the attenuation of a virus with Heracles' task of taming the Ceryneian Hind

is to indulge in what might seem to be exaggeration, but the two tasks are both arduous and time consuming. Attenuation of poliovirus can most easily be defined as loss of pathogenicity for man, but retention of all antigenic qualities for immunization purposes. Our understanding of the phenomenon of attenuation is very scanty because it has to be judged in relation to virulence, and virulence is one of the scientific terms most easily escaping correct interpretation, particularly in the field of polio research. When the work on polio began in our laboratories in 1947 the criterion for virulence of a polio virus was its ability to cause paralysis upon direct inoculation into the nervous system of a primate. This criterion is still used today and yet it is and will remain a highly artificial one until we can explain the factors determining the presence or absence of paralysis in cases of polio infection in man. It should be remembered that there is no direct evidence that polio strains isolated from human paralytic cases are all virulent for the central nervous system of monkeys. Conversely, there is evidence for a marked variation in pathogenic properties for monkeys of virus strains isolated from polio-infected but asymptomatic children (3), but this does not contribute much toward clarification of the problem. Furthermore, the term virulence or neurovirulence is often misinterpreted as referring to the character of the virus only, with complete disregard of the host. Yet such factors as age (4), peripheral trauma, exercise and stress (5) play an important role in the determination of the virulence of a given strain. It has even been proposed that the host factors may be more decisive in the final outcome of a polio infection than the character of the virus (6).

Returning from this digression on the theme of attenuation and virulence to the early history of the development of poliomyelitis vaccine, studies on the TN strain of Type II virus were conducted for 2–3 years prior to feeding the virus to man (7). Since tissue culture techniques were not available at that time, the virus was subjected, as mentioned before, to numerous passages in laboratory rodents such as cotton rats and mice and tested sporadically in monkeys for intracerebral pathogenicity.

The same procedure was used for the attenuation of Type I virus, which, in contrast to Type II, is responsible for most cases of paralytic poliomyelitis throughout the world. In 1952 a mixture of two Type I strains, one the virulent Mahoney virus and the other a relatively mild strain called Sickle virus, was injected into mice, using a technique of intraspinal inoculation newly developed by Li and Schaeffer (8). Following adaptation of either the Sickle or the Mahoney virus, or both, to growth in the central nervous system of the mouse, this strain was serially transferred through 27 passages in mice. Following this it was judged, in 1953, sufficiently non-pathogenic for monkeys (9) to be considered as a "candidate" for oral administration to children. By then, thanks to the work of Enders, Robbins and Weller (10), tissue culture systems became available for the study of virus infections, including polio. This method was used in preparing the SM strain of Type I virus for administration to man and for the laboratory tests on material excreted by children who were fed the virus.

In 1953 and early in 1954 Jervis, Norton and I fed the attenuated Type I virus to three children who had no antibodies against Type I virus (11). Again, this was the first attempt to immunize a child against the dreaded paralysis-inducing Type I virus by oral administration of an attenuated strain. Two children received Type I virus alone and one, who was also non-immune to Type II virus, received a mixture of two attenuated viruses: TN (Type II) and SM (Type I). None of the children showed any signs of illness and all developed antibodies against the virus they were fed. The child who received a mixture of the two strains developed antibodies against both viruses. Thus, a new principle was established, indicating the possibility of immunization by oral feeding of a combination of two or more strains of polio administered simultaneously (11). Investigation of the pathogenicity of the

attenuated Type I virus after passage through the human intestinal tract was included in this study, and showed that passage through man did not result in exacerbation of pathogenicity as tested in monkeys. This completed the first phase of the study of attenuation in the laboratory of two strains of polio virus which were used successfully for oral immunization of man.

OTHER METHODS, OTHER WORKERS

I will now summarize work by other investigators, employing sometimes similar and sometimes different methods. Roca-Garcia and his colleagues (12), who were also working at Lederle Laboratories, introduced the use of the chick embryo as another host for adaptation and possible attenuation of polio virus. They succeeded in infecting a developing chick embryo with a hamster-adapted (13) strain of Type II virus (the MEF1 strain). After 71 passages in chick embryo this egg-adapted strain showed low paralytogenic properties when injected intracerebrally into monkeys (14). Several years later (in 1956) it was tested for its immunizing capacity in man; however, its ability to establish intestinal infection was found to be poor and its immunizing properties not outstanding (15). Progeny of this strain, isolated from virus plaques on monkey kidney tissue culture system, failed in the hands of Plotkin *et al.* (16) to establish alimentary infection and antibody response in 3 out of 4 infants fed the virus. In 1954 Li and Schaeffer published their studies on adaptation of the Mahoney Type I strain to laboratory mice (17). The resulting variant was then passaged through monkey testis culture and monkey skin (18), yielding a virus of low paralytogenicity for primates. This was made available to Sabin, under the name of LSc strain, and, after further studies on attenuation, is used today by Sabin as a Type I vaccine. In 1954 Sabin *et al.* published (19) their first study dealing with laboratory investigations of variants of polio virus. In the attempt to attenuate the virus Sabin (20) made several passages of polio strains every 24 hours in tissue culture, using massive doses of virus as inoculum. At the end of such a passage cycle one passage was made with a very dilute virus inoculum in order to "catch" particles with low pathogenic properties. In 1955 Sabin (21) published a study of feeding of a small number of human subjects with attenuated strains which were subsequently discarded.

THE STABLES OF AUGEIAS

The introduction by Dulbecco and Vogt (22) of tissue culture techniques which made possible selection of the progeny of isolated particles of a virus and the application of this technique to polio research, have greatly facilitated investigations on the development of attenuated strains. The stables of viruses created by the methods described above—methods which in the light of the new knowledge were rapidly becoming obsolete—could now be cleansed. Although Heracles was to clean the cattle yards of Augeias in one day, "cleaning" of the stables of attenuated viruses was a more time consuming, though certainly less arduous, task. Instead of diverting the rivers Alpheus and Peneius to flush the yards, the "cleansing" was done by plating out viruses on tissue culture monolayers, discarding specimens more pathogenic for monkeys, and subjecting those less pathogenic to repeated "purification", using the same process over and over again. *Variants of all strains of live virus used today for oral immunization of man have been selected by this method.* The term "selection" instead of mutation is used purposely. There is no available evidence indicating that the long and arduous process of attenuation as applied up to now is anything else than cleaning of a stable of "white-legged black bulls, red stud bulls and ferocious silvery-white bulls", paraphrasing again from the labors of Heracles. The more ferocious beasts are left behind, the tame animals are selected for breeding, their progeny again are screened for mild character, bred again and so continued. Those of you who know your mythology probably remember that in spite of solemn promises, Heracles received no reward for his

labor. Augeias even denied that he and Heracles had struck a bargain. Familiarity with the story of live virus vaccine against polio makes one sometimes wonder if one is dealing with a *historical* myth only.

COME TU MI VUOI

More extensive laboratory studies during the past three years permitted characterization of the attenuated strains of polioviruses according to markers other than pathogenicity for monkeys. The death or survival of a monkey injected intraneurally with poliovirus is not an exact criterion of attenuation for man and use of many monkeys is expensive. These "laboratory" markers have been developed by several groups of investigators and relate to the following properties of an attenuated strain as compared to a virulent virus: Poor growth in tissue cultures kept acid under low bicarbonate content (23), poor growth in tissue cultures of a stable line of monkey kidney cells in contrast to excellent growth in fresh explants of monkey kidney (24), and high sensitivity to development under high temperatures (25). Estimation of these characters is not a simple laboratory procedure, since knowledge of the existence of the markers is based on the study of kinetic reactions following observation of growth of viruses in one or another system under different conditions. However, these characters of virus have enabled us to "mark" the attenuated viruses. Another extremely useful tool has been developed recently in connection with serological differentiation of strains of polio within the same type. Studies of Wenner (26), McBride (27), Gard (28) and Wecker (29) indicate that a given strain of a given type can be "marked" serologically so that it can probably be "spotted" at any given moment in its peregrinations. The existence of these markers may finally lead to achievement of the most important goal in the laboratory study of poliovirus: true mutation through chemical change of the infectious nucleic acid. In contrast to

TABLE I

RESULTS OF ORAL ADMINISTRATION OF TN STRAIN TO THREE SPECIES OF PRIMATES*

Pool No.	Species	Dose of Virus (ml)	Total Number Fed	Number Excreting Virus	Number Showing Antibodies	Range of Antibody Titer
16	Man	1, 5, or 10	9	7	9	1:20–1:500
	Chimpanzee	10	2	1	2	1:85–1:95
21		10	2	1	2	1:60–1:700
23	Man	10	5	3	5	1:32–1:2500
24		5 or 10	8	5	8	1:10–1:600
F_1	Chimpanzee	2 × 10	3	1	3	1:7–1:300
	Man	5	54	31	54	1:15–1:500
31	Chimpanzee	10	4	0	4	1:2–1:35
	Cynomolgus	3 × 2	11	0	0	—
	Cynomolgus	2 × 6	5	0	0	—
YHP N-63	Cynomolgus	3 × 2	5	1	2	1:2
Grand total	Man	—	78	47	78	—
	Chimpanzee	—	9	2	9	—
	Cynomolgus	—	21	1	2	—

* In no instance included in this table were signs of illness noted. Reproduced from Proceedings of The National Academy of Sciences, Vol. 40, No. 1, Jan. 1954.

selection, which is a somewhat haphazard and prolonged process of attenuation, mutation may in one or two steps radically change the character of the virus.

"ON NE BADINE PAS AVEC 'L'HOTE' "

The study of the virus as a virus and not an entity eliciting response from its animal host is an art, but an abstract art. Piet Mondrian and Jackson Pollock are great painters, but in their special genre. Introduction of the virus into a living host and the reaction of the latter find no parallel in the test tube. In the case of poliovirus the only real host is the human subject, since he represents the only truly susceptible species and has no counterpart in the animal kingdom. In 1953 Jervis, Norton and I "communicated" to the National Academy of Sciences (30) results of a comparative study on oral administration of poliomyelitis virus to man and ape. The results are shown in Table I, reproduced from the paper. Here an attenuated Type II TN strain was fed to man, chimpanzees and cynomolgus monkeys. The response in monkeys was poor, in chimpanzees intermediate, and in man excellent. We ended the paper by saying: "It is also clear that for certain questions the crucial answers may have to be sought in man himself since data obtained in animals may be inadequate" (30).

THE APPLES OF HESPERIDES

In 1951 the first phase of the original field trial was completed. Confirmation of the results of the trial and more extensive study of reactions in the human host was the next step and for this it became urgent to arrange for expansion of research in human subjects. The 11th labor of Heracles was to be undertaken. A fateful meeting took place in New York in the Barbizon Plaza Hotel on January 19, 1952 between Dr. Smadel, at present Associate Director of the National Institutes of Health, Dr. K. F. Meyer, Director of the Hooper Foundation at the University of California, and myself. I was looking for counsel from Nereus and Prometheus. Dr. Smadel was familiar with our work on the immunization of man with living poliovirus and suggested to Dr. Meyer and myself that we establish a cooperative study. This led to prolonged and fruitful collaboration, when the search for the golden apples of the Hesperides was conducted near the Golden Gate, more precisely in Jack London's Valley of the Moon. Dr. T. L. Nelson, Superintendent of the Sonoma State Hospital, became an active collaborator in the study, which began in 1952 and had as its aim elucidation of the following points in the virus-human host interaction:

(1) The smallest dose of the attenuated virus which will still infect the human intestinal tract.

(2) The duration of intestinal infection and the extent of spread of the virus from the virus-fed subject to non-vaccinated, non-immune contacts.

(3) Existence of interference between two or more strains administered simultaneously.

(4) Problems concerning different vehicles for feeding the virus.

(5) Serial passages of the attenuated strains in human subjects.

(6) Administration of attenuated virus in the presence of passively acquired antibody.

(7) Local resistance of the human intestinal tract elicited by exposure to attenuated virus.

Plucking of the golden apples in this eleventh labor of Heracles took several years but the results (31) of the investigations were very gratifying. The minimum infective dose of Type I virus, the then used SM strain, for the human intestinal tract was the equivalent of 2–20 plaque forming units of the virus. It should be mentioned in passing that infectivity for the intestinal tract of presently available strains of live poliovirus varies considerably (32) and that this property may determine the degree of spread of a given virus: Those which infect in a smaller dose spread more easily. The duration of intestinal infection varied from 16 days to 104 days for Type I virus. (In another study (33) the record length was extended to 171 days.) The spread of virus occurred from six children who were fed virus to five out of 15 Type I non-immune contacts but not to

seven non-immune nurses. Administration of more than one strain simultaneously led occasionally to interference, i.e. suppression of infection and of antibody induction by one of the strains (34). Administration of one virus to a subject already excreting the other virus which had been fed some time before was an easy method of overcoming interference. Sabin has also observed interference between three polio types administered simultaneously and suggested feeding the three types in a certain sequence (35). In the hands of Plotkin *et al.* (16), however, this actual sequence of administration of poliovirus types played no role. The only important factor was the spaced feeding. More recent data (36, 37) obtained from the field indicate that the presence of other enteroviruses may interfere with the seeding of the intestinal tract by attenuated poliovirus and that in some parts of the world, particularly tropical and subtropical areas, such interference may be a difficult problem to overcome. Conversely, opinions have been expressed, particularly by the Russian scientists (38), to the effect that re-exposure to the attenuated virus, spreading from members of a "non-vaccinated" community, may vaccinate an individual who failed to become immunized on the first attempt either because he had been fed three polioviruses simultaneously or because an enterovirus was present in his intestinal tract.

Results of studies conducted in California have also indicated that the virus can be administered to human subjects in different forms, and that when it is fed in a capsule it will produce intestinal infection but cannot be recovered from the region of the pharynx. These results were confirmed by a study of Paul *et al.* (39).

Attempts to limit the period of intestinal infection have failed. We are not familiar with any drug that could prevent further spread of the virus, nor is there any known agent for such limitation other than the properties inherent in the virus itself.

One of the last phases of the study in California was conducted in cooperation with Dr. T. L. Nelson, and consisted of serial passages of Type I attenuated strain of poliomyelitis virus in man (40). In this study a Type I non-immune child was fed the vaccine and the virus was isolated from the fecal material. The resulting suspension was tested in monkeys, first by the intracerebral and, later in the trials, by the intraspinal route. If no exacerbation of neurovirulence for monkeys was observed—and this was the case—it was made into a bacterially sterile suspension and administered orally to another Type I non-immune child, and so on. The results of intracerebral inoculation of the fecal virus preparation into cynomolgus monkeys failed to show an increased pathogenicity in the course of 6 serial passages of the virus in man. This was confirmed several years later by Smorodintsev in Leningrad (41). It should be noted that the Type I virus which we are presently employing in mass vaccination programs does not originate from that used in the initial vaccinations in 1953–56, but was isolated from a child fed the 4th human passage of the virus (40). This strain was again subjected to numerous laboratory procedures at the Wistar Institute for selection of the least virulent particles and represents a different strain from that used originally.

Administration of gamma globulin to children at the time of virus feeding had no effect whatsoever on the incidence and duration of intestinal infection or active antibody response (31). In the California study we have observed for the first time local resistance of the intestinal tract of children to re-infection with the TN Type II virus three years after the first feeding (31). These results have been extended to work done with the Type I virus (32). Subsequently Fox *et al.* (42) and Horstmann *et al.* (43) have shown the same intestinal resistance to infection upon exposure to an attenuated strain in subjects with naturally acquired antibodies. Sabin (3) has also observed local intestinal resistance to re-infection with the same strain in a certain proportion of subjects when he fed the attenuated strains.

"THE CHILD IS FATHER TO THE MAN"

"Is he? Then in the name of common sense why do we always treat children on the assumption that the man is father to the child?" (G. B. Shaw Prefaces. Constable & Co., Ltd., London, 1939.)

One of the most important aspects of the study of virus-host relationship is the susceptibility of the host at different ages to a virus infection. In order to elucidate these factors in the field of live attenuated poliovirus, a collaboration was established with Dr. Joseph Stokes of Philadelphia during the early phase of the original investigations. Studies conducted in cooperation with Dr. Stokes, and later with my colleagues Drs. Plotkin and Pagano, concentrated on the problem of vaccination of infants less than 6 months old. Preliminary results indicated that infants less than 6 months old can be successfully immunized against poliomyelitis through feeding (in formula) of living attenuated virus (44), even in the presence of transplacentally acquired passive antibodies. Similar studies later conducted elsewhere (45) indicated the complete harmlessness of such an immunization procedure. Infants two months of age or older developed intestinal infection at the same rate as older children or adults, and those less than two months old were slightly more resistant to the same dose of virus (16). However, when the dose of attenuated virus was increased 10 or 100 fold over that usually fed to older children, establishment of intestinal carrier state, followed by the development of antibody, took place even in infants who ingested virus within a few hours after birth (16). Infants who fail to be immunized after the first feeding of virus can be successfully immunized by the same dose repeated when they are somewhat older, thus excluding the possibility that administration of an infectious agent immediately after birth may lead to tolerance and inability to develop protective antibodies later in life. Following administration of virus the passively acquired transplacental antibodies "blend" into the active antibody, which was found to persist following a single feeding of virus for a period exceeding 3 years (the longest so far tested) (46).

There is great attraction in the thought that perhaps the newborn population is the ideal population to receive live virus and that too little emphasis has been placed on the host, who in the end reacts to the virus infection. In summary, it may be pointed out that there are numerous advantages in the immunization of young infants against poliomyelitis with living attenuated virus vaccine:

(1) The virus can be administered within hours after birth when the newborn are in the hospital, or, if at home, are still under the immediate care of a physician or a midwife. This may assure a more proper administration of the vaccine.

(2) Administration of the virus at a time when relatively high levels of transplacental antibodies are present in the serum of the recipient allows "blending" of these antibodies into the virus-induced active type of antibody.

(3) Either because of shorter duration of intestinal infection, or because of factors not as yet clearly known, the spread of virus from the vaccinated infant less than 6 months old to his surroundings does not occur very frequently.

(4) In countries where visits to pediatricians or clinics at definite intervals after birth are routine, administration of the two other types of virus may coincide with such visits, thus assuring a proper vaccination procedure. It should be emphasized that in view of the preponderant role of Type I virus as the cause of paralytic poliomyelitis, it is our opinion that attenuated Type I virus should be administered first. In this way protection against the greatest menace is guaranteed, even if for some reason the child is never fed the other two types of virus.

(5) Immunity following virus feeding to a newborn infant is longlasting. It is possible that it may last for years, perhaps even a lifetime. There are, of course, no objections to refeeding the virus at certain intervals during the life of an individual who was vaccinated as

a newborn. However, so far there are no indications that this is necessary.

(6) Last, lack of opportunity for enteroviruses other than poliovirus to infect the intestinal tract of a newborn within hours after birth eliminates interference and assures successful outcome of the vaccination procedure.

"FROM HERE TO ETERNITY"

Immunity following administration of living virus may well last "from here to eternity" or "from cradle to grave". Children fed the old TN virus in 1950 (2) have antibodies against Type II virus 8 to 9 years later, the longest period so far tested (46). Type I poliomyelitis antibody was present in 7 children who were fed the SM strain 4 years ago, including one who was fed the mixture of Types I and II and is still immune to both types. As mentioned before, virus-fed infants retained immunity for a period of 2 years and will probably be immune long thereafter. Because of the "head start" of our group in this study, others have not as yet had an opportunity to investigate duration of immunity in subjects they had immunized. However, in a recent communication Sabin (47) describes persistence of homotypic antibody in 5 children and 6 adults fed all 3 types 2 years before. When re-exposed to a massive dose of virus, marked local intestinal resistance was observed against Types I and II virus but the evidence of reinfection with Type III virus was frequent.

TACTICAL EXERCISES

Thus we have travelled a long way since the time when the attenuated virus was first used. Then, when the work began, it was difficult to project into the future a present that contained only 20 subjects successfully immunized through feeding of the virus. New faith had to be created since the existing faith was in the development of inactivated virus vaccine only. It was also not too easy to bring over to our side the indifferent and the undecided, since my associates and I were alone in this field when the work began and remained so for several years. Gradually, however, other scientists became aware of this problem and joined us in this field of endeavour, which by then was developing rapidly.

In 1957, at the end of what may be called the first era of the history of live virus vaccine, all available experimental and clinical evidence pointed to the conclusion that live attenuated viruses seemed to be safe for use in man. An attempt to organize a field trial of larger magnitude was clearly indicated and an opportunity for a real "break-through" came when cooperation was established between the Government of the Belgian Congo and ourselves. During 1957 the number of inhabitants of the Belgian Congo who had been fed live virus was rising rapidly and the "climax" occurred in the beginning of 1958 when a mass vaccination trial of 215,000 subjects, fed the virus at a rate of 12,000 people per day, was organized by Courtois, Jervis, Flack and myself in the Ruzizi Valley (48). I have found the shortest and best description of this first large-scale live polio trial in an article published in 1959 by M. P. Chumakov (49) in connection with the polio trials conducted in Russia. He said—and I am quoting, translating from Russian—"We have adopted (for the purpose of the Russian trials) a procedure chosen by Dr. Koprowski, who successfully employed the attenuated Type I poliovirus (substrain Chat of Strain SM) in the Belgian Congo in 1958 for oral immunization of more than 320,000 children against poliomyelitis. No complications or cases of poliomyelitis were observed among the vaccinated or among subjects who were in contact with the vaccinated individuals (49)."

The Belgian Congo trials have enlarged considerably and during this year 75,000 children 0–5 years old have been vaccinated in Leopoldville (50). More vaccination campaigns organized in several provinces of the Belgian Congo are raising the number of vaccinated individuals into millions. Following preliminary field investigations (51) 10 million children and adolescents in Poland are being vaccinated now. Dr. Gard in Sweden (52) and Drs. Schär and Buser (53) in Switzerland are carefully

enlarging their preliminary trials. Russian scientists (54) in an energetic campaign have immunized millions of subjects with live virus vaccines. Immunization campaigns have been started in South America and Mexico (55). Thus, from a rather modest beginning the live virus vaccination mushroomed during the last two years into a project of considerable size.

ENVOI

The history I have just given of the development of live virus vaccine is my attempt to "tell you the origin of wheat". I should not be surprised, however, if you at some time or other hear a different version, put forth by those scientists who follow Schopenhauer's advice on merit: "There are two ways of behaving in regard to merit: Either to have some of one's own, or to refuse any to others."

Now that I have talked at such length in my effort to substitute facts for some of the myths surrounding the origin of attenuated poliovirus vaccine, I realize that the time has come to end this talk on justification of my performance.

In a court case called "Is laughter illegal?" Her Majesty's Customs and Excise are suing Bathbourne Literary Society for payment of entertainment taxes in connection with a talk by Mr. Poker entitled "The Ethics of Fun" (56). In the case argued before Mr. Justice Wool it has been stated that a lecture by a humorous writer draws people to be entertained and not to be instructed and, therefore, should not be tax exempt. What follows is the judgment given by His Lordship:

"In my opinion, the Crown has no case at all, and the defendant Society has done well to contest the claim. It springs from two wrongful but widely spread beliefs: first, that what is instructive cannot be amusing; and, second, that what is amusing ought not to be allowed, and, if it cannot be prevented, ought to be discouraged.

"The first is the common fallacy of confusing heaviness with weight, or supposing that a light touch is the same thing as levity. Statesmen who make the House of Commons laugh are almost always suspected of insincerity and shallowness. A speech which is witty we are inclined to dismiss as so much 'froth', forgetting that froth is the best sign that there is good beer below. But a dull speaker, like a plain woman, is credited with all the virtues, for we charitably suppose that a surface so unattractive must be compensated by interior blessings.

"This distrust of laughter is especially strange in the English race, which prides itself so loudly upon its sense of humor; but its existence is not to be denied, and it is creeping into the administration of the laws. I have remarked before that while an amusing performance of one of Shakespeare's plays is heavily taxed, a dull lecture about all of them goes free."

I hope that you would be willing to pay the tax, should such an occasion arise.

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Colonel A. Parker Hitchens, M.D.[1]

By P. F. LUCCHESI, M.D.[2]

IN 1940 I had the good fortune to meet the late Colonel A. Parker Hitchens, Medical Corps, U.S.A., Retired. The year before, the Colonel was appointed as the George S. Pepper Professor of Public Health and Preventive Medicine at the University of Pennsylvania. Prior to this, he had served our Government faithfully and with distinction, in many important posts in this country, as well as in the West Indies and the Orient.

As a teacher in Military Science and in the field of Public Health and Preventive Medicine at Penn, he brought with him a wealth of experience gained as Director of the Army Laboratory, and as Professor of Bacteriology in the Army Medical School. In the Philippines, he was advisor on health matters to Governor General Leonard Wood, in which post he demonstrated his great ability as an organizer and administrator by establishing the School of Public Health and Preventive Medicine of the Philippines.

While at Penn, with the help of the late Dr. John J. Shaw, Secretary of Health of Pennsylvania, he revived the School of Public Health and Preventive Medicine. He was instrumental in planting the seed of Public Health in the minds of many doctors, dentists, nurses, sanitarians and others in this State. This seed has grown so that today Pennsylvania is well on its way to merit recognition in the field of Public Health and Preventive Medicine. Many professionals and non-professionals alike, some of whom are here tonight, owe their interest and their opportunity for acquiring an education in this field to Colonel Hitchens. I personally shall always be grateful for this privilege. It was because of his sympathetic understanding that I was able to work for my master's degree, while I was managing two other posts in the Philadelphia Department of Public Health.

If anyone should be given the title, "Father of the Public Health Movement in Pennsylvania," it is the late Colonel Hitchens.

As a human being, one could not help but be impressed by his kindliness, gentleness and patience, yet he was not soft. He was firm and strong when the occasion required. He would go to any hardship to help a student, or any fellow man, solve a personal problem.

His sense of responsibility was so great that later, while Commissioner of Health of Wilmington, Delaware, he neglected his personal health by postponing a surgical operation, in order that he might perform his job as Commissioner of Health during a serious poliomyelitis epidemic in that City.

Colonel Hitchens was a great and brave man. He passed into the great beyond on December 10, 1949, but to those of us working in the public health vineyards of Pennsylvania, he will always be remembered as a good friend, a faithful worker, and as the one who gave us the inspiration and the opportunity to serve.

"Not—How did he die?
But—How did he live?
Not—What did he gain?
But—What did he give?
These are the units
To measure the worth
Of a man as a man
Regardless of birth.
Not—What was his station?
But—Has he a heart?
And—How did he play
His God-given part?
Was he ever ready
With a word of good cheer
To bring back a smile,
To banish a tear?
Not—What was his church?
Nor—What was his creed?
But—Had he befriended
Those really in need?
Not—What did the sketch in the newspaper say?
But—How many were sorry when he passed away?"

JOSEPH W. POST, M.D.

[1] Read before the Section on Public Health, Preventive and Industrial Medicine, 6 March 1956, on the occasion of the first Arthur Parker Hitchens Lecture.

[2] Executive Vice President and Medical Director, Albert Einstein Medical Center, Philadelphia, Pennsylvania.

Mastering Long Term Illness[1]

By EDWARD L. BORTZ, M.D.[2]

IT IS a pleasure for me, speaking for the Lankenau family, to bid you welcome and to thank you for the high honor you have bestowed on us coming as our guests to Lankenau for this meeting. The subject for the evening's discussion, "Mastering Long Term Illness", is high on the priority lists of all hospital services today.

Thoughts of the man who is being memorialized this evening, Dr. Hitchens, bring to mind an individual of unique qualities. He was of the laboratory medical service but, at the same time, he possessed a breadth of interests and sympathetic contacts with other areas of medical science and practice throughout the entire world. Dr. Hitchens was my friend, a soft-spoken, gentle, and kindly man impressive and persuasive in conversation. In his total makeup he reflected what I believe Robert Louis Stevenson had in mind when he spoke of the physician as the flower of our civilization. Dr. Hitchens adorned the profession and through his keen understanding of the science of bacteriology he advanced our knowledge in no small degree.

Long term illness, this term I believe is preferable to chronic illness, is one of the major challenges facing modern society. It has been projected into sharper relief because of the spectacular advances taking place in the control of the acute maladies during the past twenty-five years. While long term illness does occur at any age and no period of human existence is immune, the longer individuals live the more likely they are to fall victim of some long term malady.

Poliomyelitis	1.
Muscular dystrophy	2.
Multiple sclerosis	2.5
Tuberculosis	4.
Cerebral palsy	6.
Cancer	7.
Mental disease	25.
Arthritis and rheumatism	75.
Heart disease	160.

The frequency of long term illness (1) is illustrated in the above table. Using Poliomyelitis as 1 the major long term illnesses in order of occurrence are listed.

The most common disorders requiring medical and social services today are diseases of the vascular system including heart disease, high blood pressure, coronary occlusion, apoplexy and generalized arteriosclerosis; second, cancer; third, arthritis and rheumatism; and fourth, nervous and mental disorders. Since breakdown of the blood vessels and cancer account for the loss of about a million lives each year the need for comprehensive planning to master these common killers is apparent.

Heart and blood vessel disease continue to take more American lives than all other causes combined, according to figures recently released for 1953 by the National Office of Vital Statistics (2). A detailed breakdown for the first five leading causes of death is given in Table I.

It has always seemed to me that the training of doctors in medical schools should be focused on the most commonly occurring diseases. After a study of normal structure and function and the various major pathological deflections young doctors should be schooled in the most commonly occurring diseases they will meet in practice. This, of course, is not to

[1] Arthur Parker Hitchens Lecture I, College of Physicians of Philadelphia, 6 March 1956. Read at the Lankenau Hospital Auditorium.

[2] Past President, American Medical Association, Professor of Medicine, University of Pennsylvania Graduate School of Medicine.

TABLE I

Cause	Number	Percent of Deaths from All Causes
Cardiovascular diseases	794,120	52.3
Malignant neoplasms (cancer)	229,100	15.1
Accidents	92,200	6.1
Pneumonia	52,320	3.4
Diabetes	25,390	1.7

infer that we recommend inattention to the other less frequently occurring conditions. The curriculum of medical schools is heavily beset with problems in the selection of just what to teach the students. Indeed there is now taking place a re-examination of the whole philosophy and program of medical education in an endeavor to reorganize training so that graduates will have a much broader understanding of the whole range of medical problems. Concentration on minute details of bacteria, organ dysfunction, electrolyte imbalance and specialized conditions to the neglect of the patient as a human being has left much to be desired. However, there is this re-examination and experimenting with various innovations in curriculum in the hope that, in the not-too-distant future, a broader plan of training may result.

New techniques, particularly the discovery of the tracer elements and their use for tagging special substances as food elements, vitamins, hormones, chemicals, endocrine substances and drugs bid fair to reveal information of the highest importance having to do with energy maintenance within the body. The study of the presence or absence of specific antibodies as guardians against various infections, the protection of cell substance against premature deterioration, and the maintenance of function against unhealthy assaults promise a much better control of long term illnesses than is now the case.

VASCULAR DISORDERS

While public attention is being focused on heart disease today the real basic lesion is the deterioration of the cells of the walls of blood vessels. This, in combination with improper and faulty nutrition, would seem to be of major significance in premature breaking down of some part of the blood vascular system. Experimental observations of Clive McCay of Cornell and Ancel Keys, of Minneapolis, are of the greatest importance. The relationship between total caloric intake and the amount of protein and fat in the diet certainly plays a significant roll in the development of vascular deterioration. Furthermore, the influence of exercise, thus far almost unstudied, may be of major importance.

George V. Mann et al. (3) demonstrated that exercise of a strenuous nature requiring high energy expenditure kept body weight down and also had a controlling influence on the levels of the lipoproteins in the blood. Conversely even on a low fat diet there was an increase in the serum cholesterol, phospholipids, and beta-lipoproteins when the individuals were gaining weight and took no exercise. Changes in body weight are indicative of changes in body composition. The blood stream with a rich lipid group in an inactive body may represent an ideal combination of factors which favors deposition of cholesterol, fatty acids and lipoproteins in the walls of the blood vessels.

Some recent studies we have made in collaboration with McCay (4) on the effect of exercise and various kinds of diet on experimental animals suggests that the deposition of lipid substances in blood vessel walls may be diminished by exercise. This promotes more complete utilization of food stuffs, and speeds the blood stream at a rate which may offer less opportunity for stagnant chemicals to deposit and fix themselves in the intima and subintimal tissues. It is becoming apparent that exercise can be a tonic to older individuals by maintaining good vascular and muscular tone, better utilization of food stuffs, elimination of fatigue products what ever they may be, and the bringing about of a sense of well being. Stagnant blood streams may encourage

vascular deterioration. Here is a field of importance in our search for the control of heart disease. This now becomes a problem of controlling deterioration of the coronary vascular system of the heart wall, a problem of heredity, nutrition, exposure and exhaustion.

The second major scourge today is cancer which kills some 200,000 individuals each year. A notable reduction might be brought about with a wider dissemination and utilization of already available knowledge concerning eradication of early lesions. Work in our research institute here at Lankenau is proceeding in the areas of normal and abnormal cell growth and metabolism.

Otto Warburg (5), Nobel Prize winner in 1931 for studies on cell metabolism has recently offered evidence of exceedingly important differences between the normal cell and the cancer cell. The secret of the cause of cancer is locked in the intricate mechanisms that sustain life that are continually going on within the cells which make up the body.

Some twenty years ago Warburg proved that a cell needs oxygen just as an animal requires oxygen for the production of energy. Warburg points out that a cell can produce energy either by respiration or by fermentation. The normal cell obtains more energy from respiration than from fermentation; the cancer cell can obtain about as much energy from fermentation as from respiration. This significant discovery by Warburg may mark an important epoch in cancer research.

If a normal cell is injured but not entirely destroyed its respiration, its energy supply mechanism suffers. A cell may be injured by depriving it of oxygen. Warburg believes that if the cell does not obtain sufficient oxygen it cannot grow normally. Cancer inciters impair respiration by poisoning the cell. To carry on the cell may resort to fermentation in which case oxygen is not necessary. When fermentation completely supplants respiration this, according to Warburg, represents a transformation from the normal to the cancer cell. If this is true then the problem is, according to Warburg, to prevent excessive fermentation within the cell. Warburg champions this view and believes he has identified the cause of cancer. It may be that we are on the verge of a new insight into the primary first deflection from normal growth which results in a tumor.

Third. Arthritis and rheumatism thus far continues as an uncontrolled malady. Granted temporary relief from steroid therapy furnishes gratifying improvement in numerous individuals, the basic underlying deflection of normal bone and joint physiology is still in the realm of darkness. However, it strikes one as logical to initiate a new approach as certain of the clinics are now doing in the search for control with the use of radioactive tracers in finding a clearer understanding of the basic picture.

Fourth. Disturbances of the nervous system fill some 56% of hospital beds. The increasing interest of the great foundations and Government in supporting research in the behavioral sciences is encouraging. The present most disturbing stricture is the lack of trained personnel to carry on these researches. Here again the relationship between sound nutrition, a vigorous and well nourished nervous system and a well oriented mind is yet to be established.

ADAPTATION

Acute illnesses, while they may temporarily inconvenience an individual, are not of sufficiently long duration to greatly alter his normal way of living. Following the inconvenience and nuisance of temporary inactivity the patient may return promptly to his former occupation and status. Long term illness however as pointed out by Ruesch changes the mode of living itself. It may tax to the utmost all of the resources of the patient. Psychologically the goals, the beliefs, the interests, the social contacts and daily ways of living must be modified while the body, physically speaking, is in the throes of the continuing illness.

Physical residues may remain permanently and there is always the memory trace of the illness which can be a traumatic experience of first degree. The physician must plan a long

range restoration program for the individual by helping him not only to neutralize and conquer the physical aspect of his experience but likewise to develop a point of view, a philosophy, that will protect him against traumatic memories that may be a heavy obstacle to returning to a useful way of living. Adaptation to one's problem and the necessity for a utilization of all of the family and community influences in such a way that recovery will be enhanced is an absolute necessity. In fact, it strikes me as important to realize that the unit of study today for the physician must be the family rather than the individual. This gives one a broader approach so that all of the resources of the family may be brought into play.

ADJUSTMENTS

When a catastrophe strikes an individual his family is affected and, depending upon his livelihood and his social position and interests, an ever widening group of circumstances may perforce be altered. In fact, the way one lives, as Ruesch has pointed out, may be responsible in part for the disease he is going to contract. The personality of an individual plays a role in the way he will react to a given catastrophic experience. It is not surprising therefore to see that recovery from a disease may be related to personality factors of the individual. As an aggressive person may over expose himself to danger and he may also disregard his physician's admonitions and ignore precautions as physicians have so frequently experienced, convalescence may be unduly prolonged. In fact, there comes to mind several patients whose lives have been snuffed out because of complete disregard of the elemental recommendations for personal safety which were given by the doctor in charge.

The type of the disorder and the length of time required to bring it under control may completely alter the future program of the patient, change his personality and have far reaching influences on the mode of living and experiences of members of the family who may be dependent upon him. An individual whose major work has to do with moving about will be tremendously influenced by an amputation; an individual who habitually overindulges in food may be exceedingly unhappy when placed under restrictions for hypertension. The frustrations that are experienced depend in large measure on his daily habits, attitudes and motivation. Whether or not an individual can adjust satisfactorily to altered modes of living necessitated by the presence of long debilitating illnesses depends on the individual's ability to face reality.

When the patient is able to surmount and rationalize these situations, indeed they may be stepping stones to more remarkable accomplishments than was formerly possible. One thinks of Edward Trudeau, of Stevenson, of Helen Keller, indeed many individuals have used their obstacles in reaching higher ground.

INDIVIDUAL REACTION TO LONG TERM ILLNESS

A great deal of work has been carried on by the Commission on Chronic Illness. Various surveys which they have made in different cities of the nation have shown the extent of the problem. Control however remains an individual challenge. The way one person reacts may be to bring the illness promptly into proper prospective, whereas another may be totally devastated. When a patient is so overawed by heart attack or a diagnosis of cancer that he feels helpless and becomes immobilized, this in itself has a depressing effect on curative processes. The feeling of danger and awaiting defeat may so overwhelm a person as to paralyze him.

Recovery cannot be but embarrassed and the length of time required for reparative phenomenon of the body systems may be extended. This in the organism is reflected as anxiety and tension.

Jurgen Ruesch emphasizes that the psychological management of the patient is the most essential therapeutic step in planning for recovery. Not only do happiness and the joy of living depend upon freedom from fear and anxiety, but the physical concomitants of anxiety have unfavorable influence on physio-

logical processes. In such a situation the attending physician must be the father confessor, the counselor, the good friend and allay the fears and anxiety not only of the patient but he must reassure other members of the family. However, if the doctor himself is in the hurried state that many apparently are today, anxious and impatient, he may lose the optimum opportunity to bring calm and peace of mind to the entire family. The release of tension in a critical situation is probably the most important first job of the family doctor. The patient who is relaxed and confident can face with equanimity even the most dangerous threat to his well being with promise of improvement.

The incentive to recovery may be the determining factor in success or failure. Where there is no will to come back the physician has a big job on his hands. It becomes a sense of values, of interests, of emotional attitudes which will determine the outcome.

IS OLD AGE A DISEASE?

So much has been written about the diseases of old age and the deteriorations that occur with time. The widespread opinion that the later years of human existence is an era to be feared must be corrected.

A positive health program with emphasis on energy maintenance, the control of exhaustion, the encouragement of specific motivation will have much to do with zest for living in the higher years. It now is recognized that hardening of the arteries is not a necessary accompaniment of long life. Deterioration of the nervous system may often be delayed. Many of the wearisome experiences of old age can be prevented. It need not be the curse of continued long life.

A keener awareness of the submerged resources of mature men and women is being recognized. The biological necessities of an adequate diet generous in proteins and vitamins, limited in calories plus the control of prolonged exhaustion minimizes wear and tear on body structures. In addition exercise of the body and of the mind too must be practiced daily to insure healthy existence.

INTANGIBLES

To master a prolonged illness the individual must mobilize all his resources and take advantage of the newest information concerning his illness and well being. At present this is frequently not the case. We know that the dietary practices in spite of over indulgence still permits a nutritional deficiency especially in older individuals. Fatigue and the lack of an all absorbing motive invite body deterioration.

We are living in an amazing era. It could well represent the era Benjamin Franklin had in mind when in February, 1780, he wrote a letter to his friend, Joseph Priestley, in which he stated: ". . . The rapid progress true science now makes, occasions my regretting sometimes that I was born so soon. It is impossible to imagine the height to which may be carried, in a thousand years, the power of man over matter. We may perhaps learn to deprive large masses of their gravity, and give them absolute levity, for the sake of easy transport. Agriculture may dimish its labour and double its produce; all diseases may by sure means be prevented or cured, not excepting even that of old age, and our lives lengthened at pleasure even beyond the antediluvian standard. O that moral science were in a fair way of improvement, that men would cease to be wolves to one another, and that human beings would at length learn what they now improperly call humanity."

Dr. Walter B. Cannon, the distinguished physiologist, some 30 years ago wrote an excellent book entitled, "The Wisdom of the Body." He called attention to the amazing resources present in every human being. These natural endowments include abundant reserves in the heart, the liver, the kidneys, the nervous system and the brain. The body in truth possesses a wisdom all its own which if nourished and cared for, will guarantee a long and abundant life. The emotional glow and the happiness of living which the talented Rabbi

Liebman talked about can be preserved well into the later years of human existence. This is an effective antidote against the weariness and the boredom of aimless tolerance of the higher years. There are intangibles which can probably never be reduced to mathematical formulae which color ones existence and weight the scales on the positive side.

THERAPY OF SPIRIT

In a stimulating article by Luxton he stated that health is to be judged more by quality of life than by length of days. Indeed he emphasizes the unity of body and mind and finds health as the root of the word which in its highest sense means "holy". There are primary diseases of the body and primary diseases of the mind, likewise of the spirit. The time has arrived according to many of our leaders when a broader understanding of the complete individual is necessary when that individual is visited by sickness which is prolonged in such a way as to deplete all of his resources and threaten his very existence.

Therapy must include rehabilitation in the modern sense of replenishment of all the protective adjuncts that are available.

Modern science is now cognizant of a hate hormone and the physical effects of fear and despair. There is a definite change in the chemistry of the body. But on the positive side the chemistry of despair may be changed to the chemistry of hope and enthusiasm. The hate hormone can be neutralized by the new vitamins of faith and kindliness and a cheerful heart which qualify one's daily existence. Doctors know that people with a long term illness often seem to die by degrees. But they may also live by degrees and if something is lost each day also something may be gained that will throw the balance in the patient's favor.

IMPERATIVES FOR SURVIVAL

With more effective control of the long term illnesses communities should enjoy more abundant health. Quantitative extension of the life span which is now taking place may well prove a curse rather than a blessing. Additional years to the life span without corresponding development of the powers of senior citizens so that they may participate in the work of the world and continue as sustaining members of society may threaten the solvency of the nation. Teen-agers of today and young adults in 25 or 30 years cannot be expected to maintain some 30,000,000 citizens over 60 years of age, if the latter are not contributing members of society. Parasitism is a form of social invalidism. For their own benefit and the protection of society the active participation of senior citizens in the working world should be maintained at all costs.

Recently the distinguished historian, Arnold J. Toynbee, has called attention to something new, an emotional situation being evidenced on a world-wide scale. Fabulous benefits are being made available for a more vigorous and indeed a happier way of life. The majestic new and potent remedies for many of the illnesses are being added to daily. The hope for control of vascular deterioration, cancer, the arthritides and mental disorders and deteriorations is high on the horizon. To obtain the benefits of these new magic potions leadership in community education and scientific research must be brought about by the cooperation of the community agencies interested in health and medical service. This is the best guarantee for mastery of long term illness and the creation of a higher, more vigorous level of health for all our citizens.

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The Arthur Parker Hitchens Lecture Fund[1]

By STUART MUDD, M.D.[2]

LT. COL. ARTHUR PARKER HITCHENS, M.D.
14 September 1877–10 December 1949

A. PARKER HITCHENS was a fighter, a fighter for the things he believed in; in particular for sound professional training in public health work. His warm and dynamic personality naturally commanded the loyalty and affection of associates and students. Among those were the Public Health Alumni of the University of Pennsylvania from whose association grew the Pennsylvania Public Health Association, Region One. Many of those now active in the public health affairs of the Commonwealth were among the loyal students of Colonel Parker Hitchens.

[1] Remarks at the Arthur Parker Hitchens Lecture IV, College of Physicians of Philadelphia, 30 September 1959.

[2] Professor Emeritus, Department of Microbiology; Professor of Microbiology (Phipps), Department of Public Health and Preventive Medicine, University of Pennsylvania School of Medicine, Philadelphia 4, Pa.

Presentation of Hitchens Fund cheque. Left to right. Dr. Thomas M. Durant, Vice-President, College of Physicians; Dr. Claude P. Brown, President, Pennsylvania Public Health Association, Region One; Dr. Stuart Mudd, Dr. Stanley P. Reimann.

It is a pleasure now to present a cheque for $5000, subscribed by friends and associates, to endow permanently the lectureship in his memory at the College of Physicians of Philadelphia. Please accept this contribution, Dr. Durant, to the College from its Section on Public Health, Preventive and Industrial Medicine, and the Pennsylvania Public Health Association, Region One. Through this annual lecture Colonel Hitchens' outstanding ability as a teacher and scientist will be perpetually recalled.

Editorial Note

This publication of Dr. Lucchesi's tribute to Col. Hitchens, and of Dr. Bortz' first Arthur Parker Hitchens Lecture (originally published in *Geriatrics*, October, 1956)—in conjunction with the fourth Hitchens Lecture, by Dr. Reimann, and the accompanying remarks by Drs. Mudd and Rogers—makes available in the *Transactions & Studies* the complete record of this lectureship to-date; the intervening Hitchens Lectures will be found, respectively, in vol. 25, no. 2, Aug., 1957; and vol. 26, no. 3, Feb., 1959.

The Arthur Parker Hitchens Lectureship: A Memorial Tribute[1]

By FRED B. ROGERS, M.D.[2]

IN SELECTING appropriate words for this occasion, I regret that I did not know Colonel Hitchens in person. This is unfortunate for me because we would have had mutual interests and such experience would have been to my advantage. From his colleagues and pupils, Drs. Claude Brown, Eugene Campbell, William Steiger, Ruth Weaver and others, I have heard good reports about "the Colonel", as teacher and man.

I came to know Dr. Hitchens, however, through his fine library—several volumes from which I now own—and from his love for, and knowledge of, the world's best literature. His books, and surprisingly, his epitaph, have pointed out scholarly interests to me.

This evening's gathering, an annual lecture honoring his memory ten years after the Colonel's death, brings to mind the lines of Robert Browning's *Memorabilia*—verses in the poet's words signifying "things worth remembering". Here Browning recalled meeting a man who had known the poet Shelley—a hero to the younger man in literature:

> Ah, did you once see Shelley plain,
> And did he stop and speak to you
> And did you speak to him again?
> How strange it seems and new!

These lines were written after hearing a man mention that he had known Shelley—a comment overheard while Browning was browsing in a London bookshop.

As a younger man in medicine, I came to know Dr. Hitchens by acquiring a few volumes from his library following its sale after his death in 1949. One can often estimate the quality of a person's mind from his books—and I value those on my bookshelves today that bear his signature. These include a copy of Luigi Cornaro's *Discourses on a Sober and Temperate Life*, wisdom from the Renaissance in Italy, a facsimile edition of Edward Jenner's *Inquiry* published in 1923—the centenary of Jenner's death, and *The Rise of Preventive Medicine*, by Sir George Newman (1932).

Colonel Hitchens collected not only landmarks in hygiene and public health, but also choice items in general and military history and *belles lettres*. A reference to this broad culture appears on his gravestone in the Churchyard of St. James the Less in North Philadelphia. The stone carries this couplet from Edmund Spenser's sixteenth century epic, *The Fairie Queene:*

> Sleepe after toyle, port after stormie seas,
> Ease after warre, death after life,
> doth greatly please.

I came upon this inscription accidently, when visiting the church for another reason. Later, Mrs. Hitchens told me the source of the lines and their origin. In *The Fairie Queene*, these words (Book I, canto 9, stanza 40) were spoken by the Redcrosse Knight, Spenser's personification of Holiness, on encountering Despair, the deadliest of sins. Despair tried to lure the hero into a dark cave, but, with the help of Una (Truth), the Redcrosse Knight withstood this temptation and eventually completed his mission. In his quest for scientific truth, Dr. Hitchens also sought elusive treasure, and for this reason we are pleased to recall his memory each year through a lectureship bearing his name.

In an address on the opening of the Institute of Hygiene at the University of Pennsylvania

[1] Remarks at Arthur Parker Hitchens Lecture IV, College of Physicians of Philadelphia, 30 September 1959.

[2] Chairman, Section on Public Health, Preventive and Industrial Medicine.

in 1892, Dr. S. Weir Mitchell cited the recent endowment of the George S. Pepper Professorship of Public Health and Preventive Medicine in that institution and summarized the goals of health:

"Hygiene aims to make growth more perfect, life more vigorous, decay less rapid, death more remote.... The highest usefulness in life is only possible with the highest standard of health.... It is my ardent wish, that through the long years to come, the quality of the work done within these walls may help the city which is dear to us and may improve and lengthen the lives of men."

It is appropriate now, and "through the long years to come", that the Pennsylvania Public Health Association, Region One, and the College of Physicians of Philadelphia honor the memory of Arthur Parker Hitchens, who graced the George S. Pepper Chair at the University of Pennsylvania and left a legacy to this city and state that will not die.

Notes on Health Affairs in India[1]

By STANLEY P. REIMANN, M.D.[2]

PURELY technical knowledge of health procedure is embodied in a core of accumulated knowledge gained from many scientific disciplines. Its successful application depends not only on the skills and devotion of its practitioners but also on the territory and the populace where it is practiced. Climate, topography, water supply, fertility of the soil, natural resources of fuel, metals, salts, wood, stone, and many others are determiners of how people live, develop and use their skills in scholarship, professions, agriculture, animal husbandry, manufacturing, trade—and conquest. People's beliefs primarily of Nature and their places in it superimposed and modifying the chromosomal, genic, and hormonal complement of the individuals of a population determine the energy, ambition, desire for education, for thinking and doing of the individuals. These self evident (to us) truisms and many others can not be denied entrance into any health program. I cannot, of course, in the time allotted, discuss all of these variables, important though they are, especially in India where control of so many unfriendly environmental factors is still in the ambition stage and where the manners, customs and ceremonies of so many people handicap technics to favor health. Such an objective, so to speak, procedure as ridding the water and milk supply of typhoid bacilli cannot be done efficiently without the populace knowing at least the general whys and wherefores. Belief in an inevitable Fate and/or in spiritual separation from the material world defeats any desire to learn and do in the material world; many other beliefs block the best of public health intentions. Killing mosquitoes is an approved method of eliminating malaria, filariasis too; in India theological doctrines of some people prohibit the killing of animals and even plants. A major public health victory in India is the reduction in the incidence of malaria. The professor of pathology in Mysore, Dr. D'Souza, told me with much satisfaction that he had to ask pathologists in other countries to send him slide preparations of malarial parasites for teaching purposes, whereas previously all he had to do was to stop almost anyone in the streets of Mysore for a sample of blood and there was a good chance of finding plasmodia in the smear. India is a huge country of about 12 million square miles, inhabited by 360 plus million people, increasing at a rate of about 6 million a year. Several authorities told me they hoped the increase would be 4 million or less per year. The infant mortality rate has been reduced to 112 or less from 146. Still in some areas it is over 600 per thousand. The general mortality rate has also been reduced from 19.7 in 1947 to 11.7 per thousand in 1955. Even so, the average life span is not much more than 30 years, so there is no acute geriatric problem in India as in the U.S.A. That there are many tough people in India is nevertheless attested by numerous individuals living to four score years or more in spite of the dysenteries, tuberculosis, typhoid fever, small pox, leprosy, various animal parasitisms, wild animals, snakes, accidents, self imposed or economically imposed inadequate diets, cancer and many other troubles.

Statistics of all these and many other diseases and causes of death are available and I could quote from official tables, admitted by Indian officers to be not too close approximations. Many figures are therefore more or less accurate. Our own statistics I take it also leave a bit to be desired according to some of our experts, though perhaps the approximations are a bit closer than those of Indians. In any

[1] Arthur Parker Hitchens Lecture IV, College of Physicians of Philadelphia, 30 September 1959.

[2] Fulbright Lecturer in India, December 1957–April 1958. Emeritus Director, Institute for Cancer Research, Philadelphia 11, Pa.

case, statistics seldom prove a proposition rigidly but indicate directions in which further details should be sought experimentally or otherwise, usually, in a relatively restricted field. Indians know this quite well and have many active medical research programs underway in universities, hospitals and research institutes. A wide variety of basic and applied problems are being tackled in public health fields and in the varied disciplines of biology, pathology, pharmacology, biochemistry and the others. An Indian Council of Medical Research founded in 1912 fosters and coordinates the efforts. Funds are supplied mostly by governmental agencies.

Many Hindu sects cremate their dead, preferably at a burning ghat on the banks of the Ganges, particularly at Benares. If this is not feasible, then on the banks of a stream emptying in the Ganges; otherwise, some other stream which also will eventually carry the ashes into the sea. When an individual dies, there is but little delay in transporting the body wrapped in shrouds on a stretcher carried aloft by four or more men. Relatives and friends make up a procession, decorate the bier with flowers and garlands (I saw several decorated with toy balloons floating over the body and other, to us, incongruities) and proceed on foot through the streets chanting and wailing to the burning ghat. Or perhaps there is rejoicing if the dead person is older and can look forward to returning in higher caste or even to become one with Brahma and also, if no widow or young children survive. The story of widows and small children is another which I cannot tell here. Firewood is expensive and scarce in India; it takes 3 to 5 hours to completely consume a body by their method. There may be a busy day at the ghats, and the bodies may be only partly consumed before being consigned to the waters. Children under 3 are presumed to be free of theological transgressions and their bodies are often thrown into streams without the need of cleansing fire. Many deaths and their causes, especially in the villages and in the hinterlands do not find their way into vital statistics. Deaths occurring in cities are likely to be recorded and, of course, those occurring in hospitals. Changes in the laws of inheritance, especially those permitting women to share are helping in the collection of medical records.

I was told that the waters of the Ganges, in addition to their theological power have the important and useful property of quickly destroying bacteria. When the question was put to several bacteriologists, the answer was referred to the cholera bacteriophage known to be present (d'Herelle); others are suspected but not definitely identified. For centuries millions upon millions of people have bathed, swam in and drunk the waters of the Ganges at Benares as they do today. Since Benares is the Holy City of a large segment of the Hindu population all crave to die there. Thus the city is crowded with the sick and the dying as well as with those who obtain spiritual consolation and uplift by their devotions on the banks of the river and in temples.

Most Moslems bury or entomb their dead with various ceremonies; the former Moghul rulers constructed the tombs seen in many parts of India. Architecturally they became more and more elaborate and beautiful culminating in the Taj Mahal. The Parsees, most of whom are Zoroastrians, consign bodies to the vultures as illustrated in the well-known Towers of Silence near Bombay.

Pathologists stated that they knew of no definite theological or other objection to autopsies but they had to be done promptly and with consideration of the widely varying traditions and customs of the heterogenous hospital populations. There is a slowly awakening interest and appreciation of this important activity of medicine among a few of the people as illustrated in the following experience. A 50 year old Hindu of a relatively liberal sect died of massive hemorrhage from the stomach in the hospital of the Christian Medical School in Vellore. Permission was obtained from his son, a college graduate of about 30, for an autopsy. It was found that the patient had advanced cirrhosis of the liver and the hemorrhage came from widely dilated and ruptured

esophageal varices. Dr. Gault, Professor of Pathology in the Medical School, who had conducted the examination, and I, leaving the autopsy room were met by the decedent's son. He asked what had been found and was given a summary of the findings. The son stated that he knew his father had suffered from cirrhosis of the liver from statements made by an attending physician and wanted to know its cause. Interestingly enough, his chief interest was in prevention; what could he and other members of his family do to prevent the condition, and thus live a longer life? In the course of the conversation it was apparent that the father had lived on an inadequate diet for many years; in his case, not because of custom and tradition from which he had broken, but because of economic reasons. The son was told that an inadequate diet, especially one poor in protein, was an indirect if not a direct, cause of the disease. This experience was highly pleasing to Dr. Gault as evidence of increasing awareness of Western medicine as it is called.

Cirrhosis of the liver and peptic ulcer are quite common in India, and it was no exceptional experience to observe in the medical wards of many hospitals, patients with cirrhosis of the liver and peptic ulcer alternating from bed to bed or from blanket to blanket on the floor between the occupied beds. I subscribe to no dogma on the causes of peptic ulcer; merely say that its high incidence, especially in southern India, is related by many doctors to the highly spiced food which the people eat. From personal experience, especially in the south of India, my wife and I can say that not only do the chopped up chillies, the mustards, the peppers, and other spices numbering as many as 20, burn the mouth, throat and tongue but they actually anesthetize them. The esophagus also tingles and at times the upper abdomen also! It was a source of amusement to my good Indian friends who invited me so courteously to their homes and to luncheons and dinners at restaurants when we pleaded for chilli-less food. "That is one old custom and tradition that we cannot remove, and anyway, we do not want to because we like it," they said.

I find that I have mentioned diet, so it might just as well be pursued a bit further. One hardly meets an Indian biochemist who in less than five minutes does not state, "The Indian diet lacks protein." One cause is economic. The people cannot afford a high protein diet. Another cause is custom and tradition. No Hindu will eat beef knowingly and willingly, with few exceptions, but many sects will eat mutton, goat, pig, fowl and fish, if they can afford it. No Moslem will eat pork but will consume other meats, likewise if he can afford it. Roughly speaking, from 80% to 90%, depending on the area in which they live, of the huge population of India is undernourished, especially to protein. The staple article of food is rice, eaten plain, mixed with chillies, mustard, pepper, curry, baked into flat cakes, etc. I soon found that curry sauce is no standard mixture but its content varies from place to place. Even my wife ate some with relish, but other curries, after gingerly tasting them, we passed by. I must say that our Indian hosts were tolerant of our peculiarities, and when we refused too highly seasoned food we smiled and made fun of ourselves; the Indians joined us and hoped that we would stay long enough to learn how good highly spiced food really is.

Many hospitals do not have Dietetics Departments as we know them. Most patients are accompanied to the hospital by members of their family. If, for instance, the patient is a man, his wife and children camp around the hospital. The wife dutifully prepares his accustomed food on a fireplace of piled up stones, with dried cow dung as the fuel. The physician's efforts to put a patient with peptic ulcer or some other condition requiring food management on a diet are frustrated before they begin. For others, the food is prepared in the hospital kitchens in two batches, one for vegetarians and one for non-vegetarians, being careful of no beef or pork for respective customs.

No tale of India is complete without mention of the cows. How they became sacred many

centuries ago receives several explanations, practical, theological and metaphysical. India has more cattle, I am told, than any other country, and the cows wander loose everywhere. It is not an unusual experience to enter a shop in one of the bazaars and find a cow standing in front of the counter. One conducts one's business over the cow. Apparently, no one knows the incidence of tuberculosis among the cows, but most doctors whom I consulted agreed it was high. In addition to ordinary cows there are many water buffalo. It is thought that these animals are more resistant to tuberculosis. Much of the milk consumed in India is buffalo milk. It might be stated that while most Indians drink milk and use it in their cooking, there are, nevertheless, certain groups who will not—another factor of protein depletion in the populace. Incidentally, most of the cows also are hungry, as are their human owners and their genetic strains are none too good. Among the many efforts to improve matters in India this has not been neglected, and attempts are being made to improve the quality of the cattle, a slow procedure because proper breeding requires confining the animals and keeping accurate records. Both of these are difficult to do in India.

I might just as well state another fact, amply confirmed by many, that a large amount of food is consumed by roving animals and birds. Monkeys are everywhere, in smaller and larger groups. The story of Hanumann and his exploits as king of the monkeys in providing a bridge of monkeys across from near Cape Comarin in India to Ceylon to enable a King in India to recover his wife, who had been stolen by the King of Ceylon, is one of the innumerable legends of India. Monkeys are sacred to many sects. Ordinarily, they are unfriendly, not to say snarly beasts, and since rabies is not uncommon among them, they are not approached with impunity. A larger kind of monkey called Langurs with black faces and longer tails seen particularly in the gardens and around the Moslem tombs in Agra are friendly and more amiable.

In many areas the skies are full of crows who not only eat their share of food but are a nuisance because they awaken so early in the morning and regale everyone with their raucous choruses. There are also many kites, a species of small eagle, whose graceful flight and glide are pleasant to watch. They, too, eat food. Then there are the vultures. Of course, it may be said that the crows and vultures, and perhaps the eagles, too, are useful as scavengers. Pariah dogs are everywhere, most of them, also hungry. They usually act independently of each other in their search and fight for food but do gang up when, for example, the jackals come snooping into the towns and villages in the middle of the night or early morning. These latter animals emit a penetrating shriek, not unlike our own coyotes, and when the howls of packs of pi-dogs are added, the din reaches many decibels. Snake charmers with their fangless cobras and large pythons are met throughout the land. Health authorities distribute anti-snake serum to strategic places, and no doubt, many fatalities are thereby prevented from the bites of cobras and a very poisonous small snake called a krait. More could be said about the animals of India; directly and indirectly they influence health affairs.

According to the 1958 Indian Government Report there are 48 medical colleges in India and a number more are being organized. They are scattered throughout the country, with two or more in the larger towns such as Bombay, Delhi, Calcutta, and Madras. I was privileged to visit 15; unfortunately, in most for only short visits of a day or two, but in five or six for a week or 10 days. I generalize and say that in all I visited there was good instruction. As in our own medical schools, there were differences in the curricula, and many lively discussions were held in which various points of view were expressed. Just to give one example, in the medical college at Amritsar in the Punjab the Professor of Anatomy, Dr. Jit, gave his students instruction in the detailed anatomy of the human body. In his museum were specimens, mostly dissected by

himself, of very high order. He stated that he was chided for requiring of his students a too detailed knowledge of the subject. He countered by saying that when his graduates practiced in small villages, many of them a day or two's journey from the nearest well-equipped hospital, they needed detailed anatomy. "If", said he, "in serious conditions such as ruptured peptic ulcer, which is common enough in India, or serious accidents, I want my students to practice surgery with familiarity with anatomy." Mere generalizations were not sufficient in his opinion and learning anatomy in a surgical amphitheater under the guidance of an experienced surgeon could not be the privilege of many of his students. How could this argument be countered when in isolated villages, for example in the desert west of Jaipur in Rajasthan, inaccessible for practical purposes except by camels, the patients were at least a two day trip from the excellent hospitals of Jaipur or Jodhpur. We also argue about curricula.

Practically all of the medical schools and hospitals have feverish building activities under way. Obsolete buildings are being torn down and replaced by new modern structures architecturally fitted and functional to the climate and topography. Many more beds are needed in India. Conferences, pathological and clinical, are held in all of the hospitals and medical colleges. The literature is scanned carefully and new thoughts and procedures given due weight. There are also more than 50 Ayurvedic and Unani medical colleges scattered in India teaching indigenous medicine. They are particularly interested in folk-lore herbs, roots, leaves etc.

With no connection with esoteric beliefs and in most modern style are several institutes devoted to the systematic investigation of plants. As an example, in the botany department of the Punjab University at Amritsar under Dr. Mehta some twenty-five graduate students are collecting specimens from all parts of India for study of their soil requirements, their anatomy and their general characteristics. In the Plant Research Institute at Lucknow their chemical and pharmacologic properties are being recorded.

My interests are particularly in tumors, but I'll forbear telling of them for fear of adding many pages to this manuscript. I cannot resist, however, mentioning the wide-spread habit of chewing pan. Spread a betel leaf, place on it crushed betel nuts, lime and tobacco, then add many or few spices according to taste, roll up the leaf into a compact parcel, stuff it in the mouth and begin chewing. The mixture is a vigorous sialogogue; an ounce is not a large expectoration of blood red juice, and my wife on the first day in India, seeing the red splatches everywhere, remarked that there must be a lot of open tuberculosis around with hemoptysis. Some inveterate chewers keep the cud in their cheeks day and night for several days. There are many sore mouths and tongues. Add poor teeth, no dental care and the stage is set for carcinoma of the cheeks, gums and tongue. My question innocently put, for I had been in India only a few days, "Do you see many cancers of the mouth?" was answered by Dr. Gault in a few minutes by displaying about fifty specimens. The surgeons in India are adept at removing tongues, cheeks and parts of jaws. Cancer of the penis is another story, but I'll stop. Even so I soon resumed interest in general pathology as I encountered the many diseases of India. I cannot help inserting a remark here to this effect. Many Indian graduates of medicine receive further training in the United States, Great Britain, and Germany. This is as it should be, but I suggest that many of our own young doctors could spend a year or two profitably in India. There they will see a few diseases like kala-azar, which we do not have in this country; but more important, they will see many more cases per unit of time of the diseases with which we are familiar than we see in our own country. I have mentioned cirrhosis of the liver and peptic ulcer but concentrated cases of tuberculosis, the dysenteries, leprosy, cancer of the mouth, of the penis, and many other conditions are present for observation and study in India. The Indian doctors are

courteous gentlemen, anxious to learn and willing to teach.

In addition to the purely technical side there are so many other angles to be considered. Night after night, I attended informal gatherings of local doctors. The discussions ranged around education, economics, food, customs and traditions, bureaucracy, etc., etc., and their effects on medicine. "Shall we concentrate on education? There are so many illiterates, in areas reaching as high as 80%. How can we print successfully pamphlets and other health appeals and information if the people that need them most cannot read nor understand? Shall we concentrate on public health measures, attempting to eliminate the dysenteries, cholera, small pox, leprosy? But this cannot be done without at least some education of the people. Shall we throw all of the weight of medicine into the economic problems, of food, family planning and a host of others? What shall we concentrate on?" Always the discussion ended by agreement that everything needs to be done. No one aspect is more important than the other. "Shall we attempt to get rid of the 8,000,000 or more Saddhus, who, doing no stroke of work, live off the people and, of course, oppose new ideas and measures. If the people in the villages absorb just a bit of education, the Saddhus will be out of jobs." If then they are not given food and shelter in a village into which they wander, the curse they place on the village will not be taken seriously. If such a curse is placed upon a village, everything that happens for the next year, whether it is a splinter in the finger or a broken bone or whatever, is blamed on the curse.

Then there is the difficulty of languages. There are some forty or more in use, some interrelated and some entirely independent. Attention must be paid to the desire for a standard language for all Indians. Broadly, those in the north want Hindi as the language. "Not so," say those in the south, "Tamil should be the language." In any case, English is the language understood and spoken by most educated Indians, but zealots, not to say fanatics, want to eradicate everything reminding them of the British or of the West in general. They are loud-spoken individuals and the Congress of India has spent hours and hours over a number of years in this debate. To an outsider, not too much in sympathy with the emotional arguments, it would seem that English should be the language. What a gigantic job to translate text books in any kind of science, including medicine, into Hindi or Tamil, and when they are translated, how to keep them up-to-date! In any case, thoughtful Indians will tell you that Sanskrit from which many Indian languages are derived spoken mostly in the north, and Tamil, a Dravidian tongue, spoken mostly in the south, have done the most in shaping the history of India. But the question of languages is another story, punctuated by many amusing and sometimes tragic episodes.

Each state in India has a health department with a minister in charge. The central minister functions from New Delhi. About once a year the ministers of health of the various states meet in Delhi, discuss their problems and decide on country-wide procedures. When the ministers return to their respective states, they oftimes adopt procedures on their own, claiming that each individual state has its own peculiarities into which general procedures will not fit. This is another of the many frustrations of the doctors. I was asked a number of times to call on local ministers of health and tell them what I thought should be done. I declined vigorously this method of approach but agreed to call on the ministers. I found they were courteous and much interested in improving health in their bailiwicks. Over the inevitable tea and cookies, the minister told of his problems and usually came to the question, "What would you do under the circumstances?" This gave me an opportunity, and, coached by the doctors, in as tactful a way as possible, I unfolded the doctors' plans. The doctors were grateful for these conferences, and I hope they were of some help. The difficulties are enormous. As one example, the minister of health in Bengal, Dr. Roy, is also

the general minister of the state. He is a physician and naturally leans toward helping health problems, but being minister also of economics, transportation, education and many other subjects, he must perforce include these in his budgets. But this subject also could be made into a long story.

Another activity in which I was asked to participate was in Rotary Clubs and other volunteer organizations. My reception at these was very cordial. I record with interest that in speaking to these groups I was often preceded by an Indian scholar who spoke at great length on a somewhat esoteric subject, oftimes philosophical, usually metaphysical and not too "practical" for a group of businessmen as in Rotary Clubs. It took no more than one meeting to find that the Indians with a good sense of humor appreciated wise cracks, as I interlarded them with the serious matters of health affairs. I hope these meetings also did some good. At least the doctors seemed appreciative of these efforts. Many stories could be told about these experiences, all of them pleasant and most of them instructive.

Soon after I began writing this little presentation I realized I could only skim the surface and very little of that. My diaries and memory are crammed with details and I perforce chose but a few for this evening. Chief among the memories are those of the considerate, courteous and hospitable treatment my wife and I received not only from the doctors and their wives, but from many others in many different professions and activities. We express our appreciation.

Finally, I emphasize that nothing I have said should be construed as generalizations for all of India. India is such a huge country with such variegated climates and topography with such a heterogeneous population with so many widely differing manners, customs and traditions that almost the only generalization possible is summed up in the word—contrast. The old mingles with the new everywhere, in thought and action, in manners and customs, in architecture, in transportation, in art and—in medicine; and yet, in this heterogeneity one feels that there is a growing sense of unity among the peoples—they are Indians—. This feeling of India as a unity was manifested at intervals throughout the centuries as it was fostered by their great leaders such as Asoka (270 to 230 B.C.) their theologians, such as Buddha, Sankhara, their poets, their architects and engineers, only to be destroyed as new invasions from without disturbed the land. There were many spells of vigorous intellectual life from time to time with records as far back as the 7th and 6th centuries B.C., only to collapse until a new upsurge began. At present there is healthy ferment everywhere in all fields. I wish I had more time to develop this theme. I leave it by quoting in substance an ambition expressed to me by a number of Indians, not only physicians and those in other sciences and arts, but by lawyers, businessmen and others. "We are much indebted to the West for what they have given us in medicine, general science, engineering, and other things, but we do not want to be complete parasites. We want to and will ourselves contribute to the advancement of knowledge and skills." My answer was and is, "Power to you, and in your turn strip the trimmings and absurdities and help us to understand the essence of your culture as it was and is being developed by your great thinkers and poets and artists."

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10. "The Voice of Asia", by James A. Michener. Random House, 1951. Pp. 235–295. (Pages 321 to 326 consist of a series of questions, many of which confronted me in India. My answers were often different than those of Mr. Michener.)

Social Psychiatry in Britain[1]

By HENRY R. ROLLIN, M.D., D.P.M.[2]

ON THE 29th of May, 1953, coinciding almost exactly with the coronation of Queen Elizabeth II, a British Commonwealth team completed the final assault on Mount Everest. On the 19th of January, 1958, another Commonwealth team had the distinction of being the first men to reach the South Pole by the overland route. What, one may ask, have these momentous achievements to do with psychiatry? Not a thing! But they do give me an opportunity to indulge in a little innocent chauvinism and they also give me a chance to sound the keynote of my theme—adventure!

History repeats itself. With the help of a little historical imagination and perhaps a dash of poetic license, it is easy to see how the same spirit of adventure which, I believe, exists in Britain today in the second Elizabethan Age, is a repetition of that which prevailed in the first. The British people of our time have emerged from a crisis in their fate almost identical with that through which they passed in the first Elizabethan Age—except that the odds against them were longer now than then—and what was at stake, namely survival, not only for themselves, but the rest of the free world, was greater. Survive they did but at an incalculable cost in terms of material wealth, political power and prestige.

With the advent of peace there was a pause for stock-taking. Then, with what was left on the credit side of the balance sheet a new Britain had to be forged. This was a formidable challenge and in order to meet it, trade winds and winds of enterprise were conjured up which, as they blew, swept away a great deal of orthodoxy and tradition. Nor was the health of the nation overlooked during the social and economic upheavals which ensued: one year only after the war ended the National Health Service was introduced by a Labor government with the blessing, however, of all political parties. It is not for me to detail the rights or wrongs of this daring adventure in social medicine, but it is my opinion that many of the developments in mental health, which is my particular field of interest, would not have taken place, or would have been inordinately delayed, if it had not been introduced.

It would be an exhibition of malignant chauvinism if I pretended for a moment that these developments in psychiatry in Britain today, to which I shall refer, all bear the stamp "Made in Britain". They do not. The history of psychiatry, in fact, shows a degree of international cooperation which might well be copied in other fields of human endeavor. For example, the pioneer work on electro-shock treatment was done by an Italian, Cerletti; deep insulin therapy by an Austrian, Sakel, and another Austrian, Wagner-Jauregg introduced malaria treatment for general paresis; pre-frontal lobotomy was pioneered by a Portuguese, Moniz. Furthermore, Freud, an Austrian Jew, and Pavlov, a Russian, have influenced psychiatric thought more than any other two men of their time. Their compelling theories divide West from East as clearly as any political ideologies and are equally irreconcilable. It is to me, incidentally, a pleasing phantasy that on some Olympian peak there is a Summit Meeting of these two giants to work out a means of co-existence.

At this point it is fitting that I pay tribute to the enormous contribution of your great country and this great city towards the shaping of contemporary psychiatric practice. The immortal names of Benjamin Rush, Thomas S. Kirkbride, and S. Weir Mitchell

[1] Read before the Section on Public Health, Preventive and Industrial Medicine, College of Physicians of Philadelphia, 13 October 1959.

[2] Horton Hospital, Epsom, Surrey, England.

come to mind. What is even more pertinent to my theme is that what must have been one of the first psychiatric out-patient clinics in the world was founded here in Philadelphia as long ago as 1867. Philadelphia has rightly been termed 'the cradle of American psychiatry' and to me it is a matter of deep satisfaction that the hands of my old friends and mentors, Drs. Weiss and English, continue to rock that cradle and rule the world—the psychosomatic world at any rate.

Time does not allow me to flick back too many pages in the history of British psychiatry; it is sufficient for present needs to go back immediately prior to the first World War. It is a strange paradox that out of the evil of war can come forth some good. The very urgency and immediacy of war compels men, including medical men, to concentrate on the new problems which threaten both citizen and soldier. Psychiatry owes much to the forcing-house of war. Until the outbreak of the 1914–18 war, England lagged sadly behind the Continent in the appreciation of the revolutionary work of Freud. The voice of Ernest Jones, whose death we so recently mourned but who was spared long enough to complete his monumental work on Freud, was heard; but it was a voice in the wilderness. With the vast numbers of "shell-shock" cases, however, which packed the military hospitals after hostilities began, the bland assurances of England's neurologists that there was no organic disease of the nervous system present, was not enough. The emotional origin of symptoms in the casualties forced itself on the attention of doctors who had to do with them. It was then, and only then, that the teachings of Freud and his disciples as a rational explanation, even if not necessarily *the* explanation of the fantastic assortment of hysterical paralysis and the like, became accepted. Once this was done the way was paved for treatment—a multiplicity of treatments in fact—but a positive therapeutic approach was introduced instead of a despairing nihilism. The second World War holds too many memories for too many of us here so there is little need to recall them. All I would like to say is that I am convinced that the brilliant and hazardous work done by teams of psychiatrists of the allied medical services, both prophylactically and therapeutically, based on earlier experiences, did much to further the acceptance of current psychiatric theory and practice—not only by sceptical colleagues in other fields of medicine, but by the public at large. For many years the laity in civilized parts of the world had come to realize that physical illness was due to natural and not supernatural agencies; but for the first time the same reasoning in relation to mental illness began to make inroads on its beliefs—and fears.

I would emphasize that fear is the parent of cruelty, and that same fear was responsible for the inhuman treatment which the mentally sick had meted out to them from time immemorial, particularly in the so-called hospitals to which they had been entrusted. The darker the Age, the blacker the treatment. In the same way, and I make no apology for plugging this point that doctors in the vortex of war came to accept the concepts of Freud and his associates, so in peace the layman was offered a rational explanation of the hitherto inexplicable and therefore fearful phenomena which occur in mental illness. May I add parenthetically that one need not necessarily subscribe to psychoanalysis as a therapeutic procedure in order to accept Freud's psychological theories. So it could be explained to the layman that the workings of the mind in mental diseases are distortions or caricatures of normal mental processes in the same way, for example, as rickets or Paget's disease of bone distort the human skeleton. The 'mental patient' was gradually understood to be ill in a true sense of the word and therefore worthy of treatment and not demonically possessed and therefore incarcerated in an asylum, insane institution, mental hospital or whatever euphemism the ingenuity of man could devise.

I am not so partisan or naive as to believe that the new psychology was the only factor which changed the attitude of the public toward mental illness. Nothing succeeds like

success, in psychiatry as in everying else, and the success, limited as it may be, of the physical methods of treatment, psycho-surgery and the new tranquilizing and thymoleptic drugs, has made a substantial contribution to this end.

As this enlightenment spread amongst the public in England, so legislation was dragged by the hair and altered accordingly. The expiation of a hundred years or more of accumulated guilt in relation to mental illness in England during the past two or three decades is a startling sociological phenomenon. It compares only with the events in France after the French Revolution of 1789—except that the tempo was slower. Revolutions as such are alien to the spirit of England, which relies more on the principle of the 'inevitability of gradualness'.

The legal blessing given to the change in public opinion is seen in the chief Acts of Parliament concerned with the care and treatment of mental patients. The Lunacy Act of 1890 is the basic act out of which subsequent legislation evolved. It conceives of mental patients being people in need of safe custody for their own interests and in the interests of others. In 1930 the Mental Treatment Act was passed (the introduction of the word "treatment" is significant) and enabled patients suffering from mental illness to be admitted to public mental hospitals without certification, i.e. either on a voluntary or temporary basis. In 1946 the National Health Service Act, already referred to, which took effect on the appointed day, 5 July, 1948, brought the development a stage further. Mental and physical illness were linked and for the first time there appeared on the Statute Book the term "mental health".

In 1953 the Ministry of Health authorized certain mental hospitals to set up a pilot experiment for the treatment of "non-statutory patients", i.e. patients could be admitted to hospital on an informal basis and were not controlled by the 1930 Act. This proved a success and now many hospitals throughout the country have their non-statutory units.

As I write, the law in relation to mental health has taken a giant step forward: the Mental Health Bill (1959) has just received the Royal Assent. For some years now, a Royal Commission, a committee, in fact, consisting of eminent physicians, psychiatrists and highly responsible public leaders, have collected and sifted evidence from a vast number of interested bodies and individuals concerned with the law as it now stands relating to Mental Illness and Mental Deficiency and made its recommendations accordingly. The new Bill contains substantial changes in the law on the lines of the Royal Commissions's recommendations.

The law is concerned with three objects: to give the patient the best care, to protect the public, and to prevent the abuse of compulsory powers. But according to the report of the Royal Commission, "advances in medical knowledge, new methods of treatment and the development of new organs of government and new social services have naturally demanded changes in the medical and administrative methods by which these objects are pursued".

It is important to give a summary of the principle provisions of the new Bill and for this I am chiefly indebted to the medico-legal staff of the *Lancet*. (*Lancet*. 1957 & 1959)

1. Single Code—There is to be a legal code to cover both mental illness and mental deficiency instead of a separate code as at present. The single term, "mental disorder", is introduced to cover all forms of mental illness or disability. Provisions for compulsory detention recognize four groups of mental disorder:

(a) Mentally-ill patients, including the aged with mental infirmity.

(b) Psychopathic patients. The term "psychopathic personality" means a persistent disorder of personality (whether or not accompanied by subnormality of intelligence) which results in abnormally aggressive or seriously irresponsible conduct on the part of the patient, and requires, or is susceptible to medical treatment.

(c) Severely subnormal patients, and,

(d) Subnormal patients.

These last two are classes of patients differ-

ing in their degree of arrested or incomplete development of mind. In the severely subnormal, the patients are considered incapable of living an independent life, whereas in the other, the patient is deemed to require or to be susceptible to medical treatment, or other special care or training and is therefore potentially able to live in the community.

2. No "designated hospitals":—the present statutory limitation of treatment of "persons of unsound mind" in "designated" hospitals is removed; and hospital authorities will be able to arrange that any kind of hospital may receive any type of mental patient whether on an informal basis or under detention.

3. Appeal Tribunals:—Mental health review tribunals including legal, medical and other members, will, on a regional basis, consider applications from patients (and relatives) for release from hospital. The tribunals will have power to discharge patients.

4. Detention Safeguards: — Compulsory powers of detention will be exercisable only when no other appropriate methods of dealing with a patient are available. Apart from criminal court cases, no judicial order will be required. Two procedural safeguards introduced against improper detention are:

(a) that two medical recommendations will be required in all cases (except in emergencies when one will be sufficient for the first 72 hours)

(b) that patients will be able to apply to a mental health tribunal at any time within six months after admission.

5. Powers of Discharge:—The general rule will be that the nearest relative of all patients admitted under the new procedures will hold the power of discharge (at present this does not apply in the case of mental defective patients). Powers of discharge are also given to the doctor responsible for the patients' treatment, in addition to the hospital managers as at present.

6. Psychopathic and subnormal patients:—Patients in these two groups may be compulsorily admitted under the age of 21 only after court conviction or transfer from prison. But psychopathic and subnormal patients will not be liable to be detained beyond the age of 25 unless:

(a) they were originally admitted through the courts or transferred from prisons or approved schools, or

(b) they are considered to be dangerous to themselves or others.

7. Powers of Courts:—Mentally disordered patients of any age convicted in the courts may be detained in a hospital for treatment if the hospital is willing to accept them.

8. Protection of Public:—If a court considers it necessary for the protection of the public, it may order that a mentally disordered person convicted before it shall not be discharged without the Home Secretary's consent. While such a restriction is in force, patients will not have access to a Mental Health Review Tribunal, but the Home Secretary will be able to refer to the Tribunals for advice at any time.

9. Administration:—The central supervision of all health and welfare services is now a function of the Minister of Health, and in line with the integration in them of the mental-health services, the Board of Control (the body at present responsible for the administration of the lunacy laws in England) would cease to exist for it would have no function.

The further recommendations of the Royal Commission which have been written into the new Bill define the obligations and functions of the hospitals and local authorities. In effect they reverse the long accepted practice of isolating the mental patient in large institutions, often in isolated parts of the country (the term "to be put away" which has long been used colloquially to signify admission to a mental hospital has a grim reality in fact). It is hoped to prevent admission to hospital of any sort by comprehensive out-patient services, or if admission is inevitable, this should be done in the first instance to psychiatric departments of general hospitals. The desirability of keeping in-patient treatment to a minimum, and as a corollary to return the patient to the community as soon as possible, is stressed. Furthermore it is emphasized that, "the division of functions between the hos-

pitals, local authorities and other official bodies should be broadly the same in relation to mentally disordered patients as in relation to others".

Implicit in these recommendations is the obligation by the community, that is the local authority, to set up prophylactic services and all types of community care for those who do not, or who no longer, need in-patient care. These would include day or residential training centers; residential accommodation in private homes or hostels, especially for the old; and general social help and advice.

Diagnostic clinics should be established on the lines of child-guidance clinics, but dealing with adults. At these centers clinical conferences between hospital and local authority staffs on the disposal of individual cases could be held. They would in effect become the local Mental Health headquarters.

This 'Brave New World' for the mentally sick which Britain's legislators hope to put into operation in the very near future could not have come about if, for the reasons I have given, psychiatry itself had not acquired a new dignity and respectability. It was not long ago that psychiatry in Britiain was described as the ugly sister of the other branches of medicine, whereas mental deficiency practice was reputed to be her equally unattractive and illegitimate child!

As an illustration of this upward trend it could be pointed out that before the second World War the only university Chair of Psychiatry in England was located in London at the Maudsley Hospital. Today, there are six Chairs of Psychiatry in England and the departments under the direction of these professors offer both undergraduate and postgraduate teaching. In-patient psychiatric units are reappearing in the teaching hospitals from which they were ousted in the last half of the 19th century (the "lunatic ward" at Guy's Hospital, London, for example, was shut down in 1860). As a result, the ludicrously inadequate teaching in psychiatry in medical schools when I was a student in the 'thirties' has vastly improved and the psychiatric awareness of present-day graduates is correspondingly greater. I doubt, however, if in either respect the situation begins to compare with that which obtains in the U.S.A. where psychiatry is the much courted, glamorous "belle" of the 'Medicine Ball'.

Again, whereas in the "thirties" there were perhaps no more than half-a-dozen general hospitals which boasted a psychiatric out-patient department, today there are at least 500 such departments in all, 400 of which are in general hospitals. In the case of my own hospital, for instance, no out-patient service was offered prior to 1948. Nowadays, the staff psychiatrists go out into the community which the hospital serves and man no less than four clinics a week in general hospitals. Not only, therefore, has psychiatry rejoined the main stream of medicine, but the psychiatrist has emerged from the not-so-splendid isolation of the mental hospital and joined forces with his brothers outside. Lastly—and I say this without necessarily throwing bouquets at myself—I am sure that there has been an improvement in the quality of the individual psychiatrist, both with regard to his academic standing and his psychological fitness for his job. It cannot be gainsaid, I'm afraid, that the doctor in the mental hospital of yesteryear not infrequently went there, for conscious or unconscious reasons, to seek asylum for himself.

Although the shape of things to come in British psychiatry will be new for the country as a whole, almost every innovation or development has been tried out somewhere, either at home or abroad, and particularly in Denmark and Holland. The blueprint for the future has in fact been drawn from the adventures of individual men of genius, progressive hospital governors, or inspired local authorities. I would like to draw thumb-nail sketches of some of these developments.

The mental hospital itself which must remain, for the forseeable future at any rate, the lynch-pin of any scheme for the treatment of the adult psychiatric disorders has undergone dramatic changes in the past 20 years.

I can speak with most authority of the hos-

pital with which I am associated, Horton Hospital, Epsom. No doubt the name of the town Epsom is familiar to you either because of the salts which were originally found within its precincts or because of the Derby, the world's premier horse race, which is run on the "downs" above the town. It has one other claim to fame: it has, as far as I know, the highest concentration of lunacy in the world—10,000 mental hospital beds in a square mile! These are distributed among five hospitals built to cope with the psychotic cases which accumulated as a result of the elephantine growth of London in the nineteenth century. Horton was one of these five and its share was 2,000 beds. It was completed in 1902 and is typical of the late Victorian type of institutional building, massive, ugly and indestructible—a monument to the dark days when the mentally afflicted were sacrificed on the altar of economy. Little could be done to change the building itself, but determined efforts have been made to improve the interior. Gone or going are the drab brown and chocolate paintwork to be replaced by brighter pastel colors. The ugly Victorian furniture is giving way to lighter and more comfortable chairs and tables. Radio and television sets are a commonplace. Other steps, important in the aggregate, are improvements in the clothing and dietary of the patients, the provision of a women's hairdressing salon and a chiropody department, a better library and improved social and recreational facilities.

All these improvements are important and make for a more civilized and humane design for living. But a mental hospital is not an hotel or a holiday camp—a fact which some of our "good-doers" sometimes lose sight of. To me the real transformation has been in the spirit and atmosphere which now pervade the hospital.

Custodial care. These are now two of the dirtiest words in the psychiatric jargon; in the context in which they were used a quarter of a century ago there is some justification for this derogatory connotation. But let it not be forgotten that the pall of chronicity still hangs over the mental hospital and that the much-vaunted, over-publicized modern methods of treatment, E.S.T., deep-insulin, psycho-surgery, and now the "tranquilizing" drugs, have all failed to fulfil their early promise. Schizophrenia, the greatest scourge of humanity today, is still unbeaten. In the treatment of the chronic psychoses, custodial care—but custodial care with a difference—is the mainspring. The difference lies in the injection into the mental hospital of some of the dynamic principles of what is known in England as "the therapeutic community", a concept to which I will refer again in a moment.

In the realization of this new approach, the old rigid authoritarian attitude to the patients, and indeed, the staff, had to be broken down, although obviously complete permissiveness cannot be allowed. Some discipline must be retained, otherwise chaos results. Nevertheless, the first step was to "open" the wards so that patients did not live, or rot, in isolated pockets, but had access at will to the rest of the hospital and its grounds. Of thirty wards at Horton, twenty-six are now "open". Later, as an extension of the same principle, an increasing number of patients were allowed to visit Epsom unescorted and more and more encouraged to spend week-ends with their families and friends in London.

The second step resulted from the growing awareness of the demoralizing effect and affront to human dignity of enforced idleness in the mentally sick. There can be no doubt that the picture of dementia seen in long-standing cases in our wards today is compounded of the deterioration inherent in their illness plus an 'institutional psychosis', forced on the patient by a dull, unimaginative routine and chronic unemployment. Today, to combat this invidious process a policy of "total push" is pursued; that is, every effort is made to employ patients in one way or another and particular emphasis is placed on work in groups. Nor must the employment be "work for work's sake". To be of real therapeutic value the work done or activity engaged in,

must be intellectually or emotionally satisfying, or both.

At Horton the core of the employment program is the Occupational Therapy Department. In 1948 this was housed in a small, temporary building; it now occupies in addition two large former wards so that at any one time up to 500 patients are handled by the O.T. staff.

In addition, specialists on a part-time basis are employed to organize and instruct, mainly again on a group basis, in art, drawing, drama, dancing and music. The appeal in all five is largely an emotional one, but as so much mental illness is characterized by disturbance in feeling or emotion, any technique which will produce an inner tranquillity or an inner stimulus is obviously therapeutically desirable. Although the use of the creative arts in mental hospitals is still experimental, I am convinced of their usefulness as ancillary or catalytic agents. But I would be the first to admit that it is all too easy to make exaggerated claims for them, either diagnostically or therapeutically.

I have so far considered two of the three vital functions of a progressive mental hospital, namely work and activity. The third is social relationships. What must be realized is that the patient suffering from a mental illness sufficiently severe to merit treatment in a hospital is, for the time being at any rate, a social failure. He has failed his employers, failed his family and most important of all, failed himself. He no longer belongs to his own social group and the resultant feeling of ostracism is often painful.

To counter this a program of traditional events is arranged, for example, dances, outings, sports events and the like. But the real innovation is the patients' social club, in our case the Poplar Club, a name chosen by the original committee over ten years ago and derived from the Lombardy poplar trees which line the main avenues of the hospital grounds. It should be clearly understood that a club of this sort is not merely a way of enlivening the hours between cessation of work and time to go to bed. The true purpose of the club is as a form of group activity which is designed, as are indeed all forms of group activity, to bring about that all-important feeling of once more "belonging", and to satisfy that fundamental "need to be needed". To this end a patients' club must be largely autonomous—the members themselves must be in the main responsible for the election of officers, for the arrangement of programs and the general organization, running and cleaning of their club.

The Poplar Club is open every evening from 5:30 p.m. to 10 p.m. and on Saturday and Sunday, all afternoon and evening. The sexes mix freely. All patients in "open" wards, that is more than three quarters of the hospital population, are eligible for membership. The club premises are spacious, attractively decorated and furnished. As a symbol of the patients' identification with their club, the walls are hung with framed paintings and drawings by the members themselves.

I mentioned earlier that it was the concept of the "therapeutic community" which had introduced a new dynamic thrust into the custodial care in British mental hospitals. I indicated, too, that in a huge unwieldy hospital dealing mainly with psychotic material, all the features of a therapeutic community could not be fully realized. There are, however, in England at least two such communities which are infinitely more advanced than that which obtains at Horton, namely, the Social Rehabilitation Unit at Belmont Hospital, Surrey, and the Cassel Hospital, Richmond, Surrey, directed by Drs. Maxwell Jones and Tom Main respectively. Both of them use psychoanalytic principles in their therapeutic approach. Incidentally, I read recently with great pleasure a book by Captain Harry A. Wilmer, M.C., U.S.N.R., "Social Psychiatry in Action", in which he pays tribute to the help and inspiration of his English colleagues in establishing a therapeutic community at the U. S. Naval Hospital, Oakland, California.

At Belmont, Maxwell Jones set up his unit to treat that most baffling and unrewarding of all psychiatric problems—the psychopath. Time does not allow me to present details of

Jones's organization and technique, but I can do no better than to repeat his words which Captain Wilmer quotes in his book: "It would seem that in some, if not all, psychiatric conditions there is much to be learned from observing the patient in a relatively ordinary and familiar social environment so that his usual ways of relating to other people, reaction to stress and so on can be observed. If at the same time he can be made aware of the effect of his behavior on other people and helped to understand some of the motivations underlying his actions, the situation is potentially therapeutic. This we believe to be the distinctive quality of a therapeutic community".

The Cassel Hospital will, I know, commend itself to psychiatrists in America, where the teachings of Freud flourish so luxuriantly. Freud prophesized that in a modern State free psychoanalysis would be as available to the citizen as free emergency surgery! It would be idle to suppose that in England this has as yet come about, but at the Cassel the nearest approach to its realization has evolved.

Dr. Main, the captain of this venturesome privateer, has blasted the old battleships of traditional nursing and hospital organization clean out of the water. Florence Nightingale, I am sure, is spinning in her grave, and I suspect that Freud is looking down with a wry smile of approval. As I see it, the premise from which Dr. Main works is that for the neurotic patient a hospital as such is a bad thing because in its artificial environment over-dependence and regression may result. If, therefore, admission to hospital becomes imperative, then, within the framework of the organization, the patient must face-up to as near a real-life situation as possible. With this in mind, patients have been encouraged virtually to run the hospital so that to an ever increasing extent they have made themselves responsible for the decorating and maintenance work, the gardening and cooking. A quite unheard of degree of freedom is permitted: patients are allowed to come and go as they please, bring in visitors at any time up to 10:30 p.m., maintain their jobs outside and consume alcohol on or off the premises. The day-to-day affairs of the hospital, for example, social activities, duty rosters, discipline and the like, are managed by patients' committees.

It is impossible in this account to do justice to all facets of this fascinating community, but I would bring to your notice the important consideration which has been given to the disruption of mother/child relationships where a mother is admitted to hospital without her child. From 1955 onwards it was made a condition of admission to the Cassel that mothers should bring their pre-school children with them.

Psychoanalysis is, as a result of experimentation, no longer offered to in-patients. Group psychotherapeutic methods, psychoanalytically-orientated, are more and more relied on and the tendency is to include other members of the family in the treatment schedule.

It is a reflection of the despairing pessimism which characterized British mental hospitals until quite recently that little or no attempt was made to equip or re-equip the patient for life outside the hospital either in the hospital itself, or in the community whence he came. In the more optimistic climate which now obtains within the hospital and the more enlightened attitude of the public without, as witness the relevant important clauses in the new Mental Health Bill, steps have been taken to remedy this grave omission.

There is no uniformity in the type and number of methods of rehabilitation which individual hospitals have adopted, but the following methods have emerged in recent years and are in use singly or in combination:—

(1) Liaison with the Disablement Resettlement Officer. This is effected by the attendance of the patients themselves at the D.R.O.'s office, or the D.R.O. makes regular visits to the hospital and interviews patients referred by the doctors or psychiatric social workers.

(2) Industrial Rehabilitation Units:—These units are scattered throughout the country and are either residential or non-residential. They are available to people either physically or mentally handicapped, and are intended to

bridge the gap between the hospital and the factory or other employment. Each is designed to prepare the disabled person to do a normal day's work under ordinary industrial conditions.

(3) Factories in the hospitals:—To inculcate the work habit, particularly in long-stay patients who have had idleness thrust upon them, some hospitals have organized miniature factories within their walls. Here normal factory conditions are reproduced as closely as possible. Contracts are obtained from outside firms for the manufacture or assembly of simple articles such as cardboard boxes, polythene bags and the like. Trade Union cooperation has been obtained and the standard rate for the job is paid.

(4) Arrangements for patients to go out to daily work:—Wherever possible, jobs are found for patients in the neighborhood, either in industry, agriculture or of a domestic sort. For this purpose, at Horton, for example, a senior member of the male nursing staff has been delegated to act as a liaison officer with various government and social agencies and with local employers of labor. The patients are housed in a separate convalescent villa which in effect functions as a Night Hospital. Up to twenty male patients now go out to work each day and return at night. They are paid the rate for the job and are expected to pay a nominal sum for their board and lodging.

(5) Domestic Science Courses:—Kitchen units have been installed in many hospitals where elementary cooking techniques are taught to the female patients together with the principles of household management.

In the course of this paper I have made passing references to day and to night hospitals for psychiatric patients. These are multiplying in England and once the Mental Health Bill becomes a reality they will play an ever increasing part in the Mental Health Services.

A day hospital is essentially a unit where the patient spends the morning and afternoon under a therapeutic regimen and then returns to his home at night. The success of the scheme rests largely on the existence of understanding relatives who are anxious to play a supporting role and do not wish the patient to lose his place in the family. The patients best suited for treatment in this way are elderly depressives who may receive psychotherapy or, if need be, E.S.T. or modified insulin. Phobic patients who are incapacitated by their symptoms can also be handled.

There are important economic considerations too. At the Maudsley Hospital in London the running costs of a 30-place day hospital are about one-third those of a 30-bed ward (Harris 1957).

The night hospital, on the other hand, is designed for patients who are sufficiently recovered from their illness not to require further active treatment and so have been placed in employment in the community. They are not yet, however, sufficiently secure to live entirely independent lives and still need the support of the hospital. They return to the hospital at night where they can enjoy the social and recreational facilities offered there.

Under certain circumstances, as at the Maudsley, the same premises may be used as both a day and night hospital in a sort of "Cox and Box" way.

The increased expectation of life of a population, although an index of the economic, medical and sociological progress of a country, is paradoxically a burden to it. Geriatric psychiatry already poses a grave problem in England and, with the march of time, the gravity is bound to increase.

Blacker (1959) quotes the figures of the Statistical Committee of the Royal Commission on Population 1949:—the population of Great Britain in 1957 is given as 50 millions; the total over the age of 65 is almost 6 millions, i.e. 11.7%. It is forecast that by 1987 the population will have risen to only 52¼ millions whereas the number over 65 will be 8½ millions or 16.4%. The number of patients over 65 resident in mental hospitals in 1957 was 49,000. By 1987, under the same circumstances as obtain today, the number who would have to be accommodated in mental hospitals would be 71,000, an increase of 44%.

I have no reason to doubt the validity of these statistical forecasts, but I have every reason to hope that in the next 30 years a happier solution to the problem will have been found. It is a sad reflection on the organization of British society that, *faute-de-mieux*, the woes that wait on age can only be dealt with in a mental hospital. Not only, as recent studies have shown, are mental hospitals not suitable for the geriatric sick, but also the old people impede the work of hospitals which are primarily designed for active treatment of younger patients. This wretched situation cannot continue, and if the directions to the Local Authority written into the new Bill are followed, it will not. There are, however, pockets of enlightenment up and down the country where steps have already been taken to meet the problem.

An an example, I turn to the city of Nottingham (Macmillan 1957) about whose comprehensive psychiatric services I will say more later. The emphasis here is on domiciliary visits made jointly by a consultant psychiatrist and a social worker. An assessment is made on the spot of the urgency of the situation and a decision arrived at as to what extent the problem is psychiatric, social or physical. By virtue of the integration in Nottingham of the Mental and Public Health Departments the disposal of these cases is facilitated. Otherwise divided administrative responsibility all too often leads to endless delays and "passing the buck".

If admission to the mental hospital is found to be inevitable then it is invariably in the first instance to the geriatric short-stay annex for a maximum period of four weeks. This procedure is carefully explained to both the patient and his relatives so that the fear which lurks in the minds of all concerned of being "put away" is avoided and the concomitant emotional distress minimized. Once in the annex the old people are fully investigated from a physical standpoint and any treatment indicated instituted. If, as a result, the mental symptoms abate, they can either be discharged home or admitted to the geriatric wards of the general hospital. Where the disturbing mental symptoms persist, or where it is impossible, due to unsatisfactory conditions, to manage the case at home, provision is made for the patient in the long-stay annex of the mental hospital.

There is too, a Geriatric Day Center (Nuffield House). This is ideally suitable for cases where the relatives, although anxious to care for their old folk at night could not do so during the day without loss of employment or earnings. It caters also to old people recently bereaved who find their loneliness intolerable and for whom introduction to a group such as exists at the Center is a blessing. If need be, the patients are collected by a hospital bus from their homes and returned after a day at the Center.

I have so far crudely sketched some of the important individual features which have already altered the face of British psychiatry. There are, however, in operation in various parts of the country complete working models in social psychiatry which have obviously had a profound influence on those responsible for drawing-up the new Mental Health Bill. These models are maquettes from which the British psychiatry of the future will be sculpted. Of these, the two most important, in my opinion, are those at Worthing and Nottingham, both of which I had the privilege to inspect.

The "Worthing Experiment", as it has come to be known, is similar in many respects to that which has existed in Amsterdam, Holland, for some time. There is one important difference: in Amsterdam there is no basic mental hospital, whereas the Worthing scheme is firmly based on a parent mental hospital—Graylingwell at Chichester, Sussex. The focal point of the experiment is a large house in Worthing, part of the 'catchment area' of Graylingwell, which functions as a 20-bed day hospital. There is also a psychiatric out-patient clinic at the local general hospital. Both the day hospital and the clinic are staffed by psychiatrists, nurses, psychiatric social workers and occupational therapists from Graylingwell.

The scheme operates thus: patients are re-

ferred to the service by the family doctor. Either a psychiatrist visits the patient in his own home, or the patient attends the day-hospital or the clinic, the latter being used largely for diagnostic purposes. Active treatment is carried out either on a domiciliary basis and/or at the day-hospital where a full range of physical methods of treatment and psychotherapy are available. A psychiatric social worker investigates home conditions and can offer advice or seek help from social agencies in an attempt to mitigate environmental factors which may have contributed to the patients' breakdown. In the event of a patient being too disturbed, or where the therapeutic techniques are too specialized for the day hospital, admission to the parent mental hospital is arranged. But the startling fact is that only one out of every five cases referred to the service have had to be so admitted.

Dr. Joshua Carse, the architect of this experiment, admits that initially it was designed to stem the admissions to and reduce the serious overcrowding in Graylingwell. He now admits that although it has achieved its objectives, the benefit to the patient himself far outweighs in importance, the benefit to the hospital. In his report (1958) he writes:—

"In the very early days of the Worthing Experiment I learned, somewhat to my consternation, that the man I saw in hospital bore little resemblance to that same man at home. At home, even though he was a sick man, he retained his identity and the sense of belonging; he was with his family and he felt secure because he was still in the community which he knew and which he understood. In hospital, the patient is an enforced member of a group living in an entirely artificial environment bearing no resemblance to anything approaching ordinary home life, but where everything is strange and often frightening." He goes on, "I cannot believe that it is helpful in treatment for our patients to be compelled to live as a member of a large group of strangers all of whom are sick people, to be completely deprived of privacy and to have to submit to the segregation of the sexes."

A variety of appellations have been used in the medical and lay press, including the 'Worthing Miracle', to describe this experiment in social psychiatry, many of them, as you may gather, somewhat extravagant. Nevertheless, in the two years or more of its existence it has achieved positive results. Its appeal lies in its humanity and because of it the imagination and sympathy of the public has been captured so that patients in the area, victims of mental illness, came willingly and early for treatment. What was the primary objective has, coincidentally as it turns out, also been achieved: the admissions to the parent mental hospital have been reduced by between 40% and 60%. Lastly, the family doctor has been given an increasingly large role to play in the overall therapeutic situation. This is vitally important because without the active participation of the family doctor no comprehensive psychiatric scheme can possibly succeed.

Nottingham, a city with a population of 312,000 in the midlands of England, has an even more comprehensive and integrated scheme which has been in operation since 1945. Dr. Duncan Macmillan, whose genius was responsible for its creation, is entitled, therefore, to write of Nottingham's "Experience" rather than "Experiment" (Macmillan 1956 & 1958).

The corner-stone of the scheme is the integration of the Mental Health Service with the Public Health Department so that the facilities of each are now available to both on a "joint user" basis. Dr. Macmillan himself is the Medical Officer for Mental Health and acts as adviser to the Medical Officer of Health of the city who, in turn, is a member of the management committee of the local mental hospital, Mapperley. The duties of the M.O.M.H. include superintendency of the city mental hospital, general supervision of the local mental deficiency institution and mental deficiency community services; responsibility for the mental health of the city generally,

including social psychiatry with all measures for the prophylaxis of mental illness and education of the public in such matters. In short, he acts in regard to the prevention, care and treatment of mental illness in exactly the same way as the M.O.H. acts in regard to physical illness.

In the actual implementation of the scheme emphasis is again placed on domiciliary visits in the way I described in dealing with the geriatric sick in Nottingham.

The out patient services provided are most extensive: the senior members of the mental hospital staff spend more than half their time in extra-mural work. There is, for instance, a juvenile delinquency clinic working with the probation officers and the courts; a child psychiatry clinic effects a close liaison with the child guidance centers. An epilepsy clinic, complete with E.E.G. department, advises on the treatment of epileptics and helps with the problems of suitable work and social adjustment. There is a marriage guidance clinic and another clinic is held at the local industrial rehabilitation unit. All cases of attempted suicide admitted to the local general hospitals are seen before discharge. Psychiatrists are always available to see cases in consultation with other clinicians in the wards of the hospital.

In the course of this fragmented and fragmentary account of developments, present and future, in British social psychiatry I have tried to maintain the key-note of my theme—adventure! But adventures on the scale of the Ascent of Everest or the Overland Route to the South Pole needed meticulous planning. The future of British social psychiatry, as envisaged in the new Mental Health Bill is, in sociological terms, no less of an undertaking than these two epics. What is doubted in many quarters is the adequacy of the planning and preparation for it.

For example, it is claimed with some justification that the tolerance of the community for the psychotics who will live and be treated in its midst has been exaggerated. Again, what is applicable to Worthing and Nottingham with their static, homogeneous and integrated communities is not necessarily applicable to London, for instance, with its sprawling, shifting, multi-racial millions having little or no sense of communal unity or obligation. Furthermore, there is even for present needs a shortage of adequately trained psychiatrists; and as has been so starkly brought out in the Younghusband Report (1959) on the staffing of local health and welfare services, there is a desperate shortage in the country as a whole of trained social workers, welfare assistants and social administrators—without whom large-scale social psychiatry cannot be practised. All these, not to mention the severe strain on the economy if the scheme is to be put into effect, are serious obstacles which will have to be overcome.

There are those moaning Jeremiahs who say that the new Bill is reaching for the moon; but, as we now know, this is no longer impossible.

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Memoir of Frederick DeForest Weidman (1881–1956)*

By JOSEPH V. KLAUDER, M.D.

FREDERICK DEFOREST WEIDMAN died suddenly on August 30, 1956, while on vacation at Bailey Island, Maine.

Dr. Weidman was born at Bristol, Connecticut, October 16, 1881. He graduated from the University of Pennsylvania Medical School in 1908. This initiated a long career with his *alma mater* for which he always demonstrated an ardent loyalty. He began his career as a general pathologist at the University of Pennsylvania in the department of Dr. Allen J. Smith, and the Woman's Medical College of Pennsylvania. He became Professor of Pathology at the latter institution. Dr. Weidman had great admiration for Dr. Smith, who apparently moulded his scientific career.

His research in dermatology and mycology started in 1917 when he was appointed Assistant Director of the Duhring Laboratory of Dermatological Research in the School of Medicine, University of Pennsylvania. This association, and, also with the Department of Dermatology in the Graduate School, terminated when he was appointed Emeritus Professor of Research in Dermatology and Mycology in 1950 at the Undergraduate School, and in 1953 at the Graduate School.

In 1921 when Dr. M. B. Hartzell resigned as Professor of Dermatology at the School of Medicine, Dr. Weidman became acting head of the department. From 1935 to 1946 he was Vice-Dean for Dermatology and Syphilogy at the Graduate School of Medicine. He was Pathologist for the Zoological Society of Philadelphia at the Zoological Gardens from 1910. He was consultant to the Philadelphia Naval Hospital and Valley Forge Hospital from 1946 to 1954. During the Second World War, Consultant in Tropical Medicine to the Secretary of War. In 1939 and 1943 he was Co-President, Section on Mycology, International Congress of Microbiology.

Dr. Weidman was a member of many American Societies and was Past President of almost all of the national American dermatological societies. For seventeen years he was a member of the American Board of Dermatology. He was corresponding, or honorary member, of a number of foreign dermatological associations and was Associate Editor of the *Archives of Dermatology*, *Mycopathologia* and the *Journal of Investigative Dermatology*.

Dr. Weidman's training in pathology, in human and animal medicine, afforded a broad visualization of disease with particular reference to cutaneous disease. This background and the character and high type of his investigative work, which totaled more than 150 publications, accounted for his impact on dermatology and his international reputation.

He was one of the first American dermatologists to engage full time in dermatologic research. He was an investigator of the first order, a wise counselor, sponsor and excellent teacher.

He was always happy to be able to impart knowledge to students, and welcomed discussion of investigative problems with them. In this manner he stimulated scientific production in many students and associates.

He was a master of discussion; with intuitive thinking he went at once to the heart of the subject. His keen insight into many fields afforded a well rounded visualization of the subject with pertinent illustrations or analogies. An admirable attribute was his ability to avoid offending the presenter.

* Read before the College of Physicians of Philadelphia, October 7, 1959. Prepared and published at the request of the Council of the College of Physicians of Philadelphia.

Dr. Weidman was slight of build, but animated and energetic. In contrast to his seemingly austere manner in the class room, was his ability to relax. He loved parties; to play pranks on his friends and to tell jokes. He was a charming host, especially at outdoor parties at his home, where he proudly displayed his flowers; his ability as a cook-out chef; and to mix a good cocktail.

The manner of his retirement was exemplary. He devoted his time to two of his ardent passions—examination of private pathologic specimens which he received from many parts of this country, and in fishing. For the latter reason, he bought a summer home in Maine. It was at this residence that his last days were spent.

Dr. Weidman is survived by his wife, the former Lillian E. Hawk, who was his co-worker, and two children of his first marriage; Dorothy Mary Burr and Dr. Allen Frederick Weidman.

Many will remember Dr. Weidman through one or more of his accomplishments, but all of us who were close to him will, in addition, remember him as a personification of John Henry Newman's definition of a gentlemen—"one who never inflicts pain".

Memoir of Horatio C. Wood, Jr. (1874–1958)*

By LEWIS C. SCHEFFEY, M.D., SC.D. (HON.)

SHORT of three years ago a revered Fellow of the College, George M. Coates, delivered from this lectern a deserved eulogy of his lifelong friend, George Bacon Wood, well-known laryngologist and teacher of professorial rank. It is now my honor and privilege to pay tribute to the memory of the younger brother, Horatio C. Wood, Jr., and one of equal distinction in the realm of pharmacology and therapeutics. Elected a Fellow of the College in 1903, Dr. Wood succumbed to a protracted illness on March 31, 1958, at the age of 84.

In his memoir of the elder brother, Dr. Coates reviewed the conspicuous careers of George B. Wood (1797–1879), and Horatio C. Wood, Sr. (1841–1920), great-uncle and father respectively of the recently deceased brothers, and repetition in this regard is not essential to this memoir. That the young lad recollected his great-uncle is entirely possible. In any event, he speaks of the latter as "Uncle Doctor" in the biographical notes to which the writer has had access.

The third son of Horatio C. and Elizabeth Longacre Wood was born at the family residence, 1706 Chestnut Street, in Philadelphia, on February 26, 1874. Dr. Lewis D. Harlow, a former President of the Obstetrical Society of Philadelphia, the attending physician, had previously served with distinction as a surgeon in the Union Army throughout the duration of the Civil War. The name of the child was recorded as "Horatio C. Wood." Horatio C. Wood III, M.D., wrote me that a family myth had developed that "Charles" was the father's middle name, but in this regard the Philadelphia birth certificate speaks for itself.

* Read before the College of Physicians of Philadelphia, 7 October 1959. Prepared and published at the request of the Council of the College of Physicians of Philadelphia.

His early boyhood was clouded by an orthopedic condition that necessitated braces for walking, but eventually surgery was successfully carried out by the famed D. Hayes Agnew. However, this was not accomplished without some rebellion on the boy's part.

Subsequent to his early years at William Penn Charter School, and a collegiate course at Pennsylvania, the orbit of his professional life may be described in the following four well-defined spheres of activity, and they will be related sequentially.

1. Undergraduate period, University of Pennsylvania, and European study, 1892–1910.
2. Medico-Chirurgical College era, 1911–1915.
3. Graduate School of the University, 1916–1946.
4. Philadelphia College of Pharmacy and Science, 1921–1950.

I. As an undergraduate at the University, he had spent time in Richet's physiology laboratory in Paris. Again, after his medical degree in 1894 and the internship that followed, he studied in the laboratory of his father's friend Hugo Kronecker, Professor of Physiology at the University of Bern, Switzerland. For recreation there were bicycle expeditions through the Bernese Oberland and to Freiburg in the Alsace-Lorraine of that day. He took advantage of a similar opportunity with Benedicenti in Milan, where he even experienced the dubious thrill of an Italian revolutionary squabble of brief duration. The European journey, separating him from his fiancée in the early days of their courtship, must have made his return to Philadelphia all the happier, for on December 19, 1899, the marriage of Horatio C. Wood, Jr., and Alice Lovell took place in Huntington, Pennsylvania.

In 1898 Dr. Wood was appointed Demon-

strator of Pharmacodynamics in his father's department at the University. This was just a few months after the explosive destruction of the U.S.S. *Maine* in a Cuban harbor had triggered a vigorous young nation into its role of "manifest destiny"—in the Far East as well as in the Caribbean.

It was during these early days that Dr. Wood undertook as a research program the absorption and elimination of strontium salts. In this work, the second item in a life-time bibliography listing 100 or more research and clinical papers, he had the cooperation of John Marshall, Berks County-born Professor of Chemistry at the University. The conclusion was that if absorbed at all, the salt was eliminated very slowly indeed, and then only as an insoluble phosphate. Furthermore, they believed that because of this slow absorption, strontium salts exerted a persistent local influence. The mention of this experimental work, published in the *American Journal of Physiology*, Vol. 1, No. 1, January 3, 1898, is pertinent because of today's "fall-out" controversies, and the deleterious effect of "strontium-90", as related in numerous publications of the U.S.A.E.C., and in other sources as well.

Progressing to Associate Professor of Pharmacology, and with little if any private practice, Dr. Wood remained in the same faculty position with the newly-elected Head of the Department, David L. Edsall. However, he resigned in November 1910, following the election of Dr. A. N. Richards, an Honorary Fellow of this College, as Professor Edsall's successor.

II. The brief period of unemployment ended and the second phase began, when a likely opportunity elsewhere presented itself. Following the sudden demise of Dr. J. V. Shoemaker, Professor of Therapeutics at the Medico-Chirurgical College, Dr. Wood accepted the offer of the vacant chair. He engaged happily in his duties there for the next five years, and was granted the privilege of private practice as well.

III. The merger of the "Medico-Chi" and the University of Pennsylvania in 1915–16 represented the third stage of his career, and one in which Dr. Wood performed valiant service. With the establishment of the Graduate School of Medicine of the University, he was promptly appointed the Professor of Pharmacology and Therapeutics. Ten years later the title was altered to Professor of Pharmacology. A further change was made in 1939 when he was designated Professor of Therapeutics, a position that he enjoyed by reappointment until promotion to Emeritus status in 1946. The completion of his task at the Graduate School rounded out a cycle that had continued for thirty years, including as well a tour of duty at the Hospital of the University of Pennsylvania during World War I. As a contract surgeon he watched over the health of the local S.A.T.C. unit, and rendered yeoman service during the influenza epidemic of 1918. This experience at the hospital of the medical school, from which he had resigned nearly a decade before, dramatically signalized Dr. Wood's return to duty at the University, for he was requested by Dr. Richards in 1919 to teach pharmacy and materia medica to the undergraduate medical students.

IV. The final field of active endeavor in Dr. Wood's life began with his selection in 1921 as Professor of Materia Medica and later of Pharmacology as well, at the Philadelphia College of Pharmacy and Science. In this situation he truly followed in the foot-steps of his great-uncle, for one hundred years before, the renowned George B. Wood had been Professor of Chemistry in the College of Pharmacy—a year after its founding in 1821, when James Monroe was formulatlng a certain historic doctrine that bears his name. Great-uncle Wood had served in that capacity for ten years, when he took over the Chair of Materia Medica and Pharmacy, but retired from that Faculty in 1835.

The tenure of office of Horatio C. Wood, Jr., at the Philadelphia College of Pharmacy and Science roughly paralleled his Graduate School commitment as noted. The College of Pharmacy and Science honored him with the degree of Master of Pharmacy in 1934, and

named him Emeritus Professor in 1950. He was again honored by the latter institution, together with other colleagues, at the 1954 winter reunion of the alumni association. Dr. Wood was respected and beloved by the faculty and student body. In his work there he had the active cooperation of Mrs. Wood, who was much interested in the Women's Club of the institution. In fact, Mrs. Wood resides in the home so long occupied by them at 319 South 41st Street, and a few blocks from the scene of Dr. Wood's final professorship. Also surviving him are his daughter, Mrs. William Hacker, of Wayne, and a son, Dr. Horatio C. Wood III, of Peoria, Illinois, three grandchildren, and two great grandchildren. The only grandson, Horatio C. Wood, IV, continues the tradition of medical practice in Cincinnati, Ohio.

Dr. Wood was active throughout his professional life with the stated revisions of the U. S. Pharmacopeia, and its companion work, the U. S. Dispensatory. First assisting his father in these duties, he continued to work with the pharmacy group, notably Professors Joseph P. Remington, Charles H. LaWall and Arthur Osol. Although the Pharmacopeia is essentially a non-profit but legal publication, the United States Dispensatory, which interprets the former, provides an income for those interested in its publication. In this respect, Dr. Wood commented some years ago as follows: "After the 23rd Edition was complete, I meditated on the fact that every chief editor of the U. S. Dispensatory in one hundred and ten years had fallen 'in battle harness' never to rise again to his work; and therefore I sold my share in the ownership of the copyright to the publishers. . . . Since then the 24th Edition was edited by Drs. Arthur Osol and George E. Farrar, Jr."

Dr. Wood participated in many other activities that ranged from American Medical Association programs to service as an expert witness in United States Government and Pennsylvania State actions connected with the Pure Food and Drug Act of 1912, and with the Harrison Narcotic Act of 1916, both of which became law during Woodrow Wilson's administrations. In connection with the former act, he published that same year a research article entitled, "The Effects of Caffeine on the Circulatory and Muscular Systems", which he mentioned as "probably the most quoted paper I have written. It was the first to establish the now accepted viewpoint that caffeine increases the contractile efficiency of a muscle." This was apropos of the famous "Coca Cola" case. His comments on the results of the Harrison Narcotic Act in relation to drug addicts and their treatment achieved considerable publicity in the press of that day. One newspaper account particularly involved the case of a celebrated murderess and drug addict known familiarly as "Katy," whom Dr. Wood had come to know as a patient. While under legal restraint, she once escaped from confinement and sought him out for advice. There was indeed much of the dramatic in the experiences of Dr. Wood's long life. In fact, his mind was that of an inquirer, and he was a person who would not hesitate to use his own bodily functions for experimentation. This he did in his early work with the strontium salts and in his study of caffeine. For twenty years he had been a "normal human guinea pig" in the course of our Fellow Isaac Starr's ballistocardiographic research.

On the other hand, a facet of character that can be taken to heart was the exciting type of recreational activity that Dr. Wood always enjoyed and had absorbed from his father's experiences at the Tourilli Club, west of Quebec, and expeditions to New England areas—the Allagash and the Maine woods, the Adirondacks, Nova Scotia and the Maritimes—and westward to the Yellowstone and the Canadian Rockies. In later years Kidney Pond and its associations were especially dear to him. His family shared in these experiences that engendered family solidarity in an enthusiasm for camping, fishing, and hunting in the great out-of-doors. When at home, his Sunday walks were legion.

It is apparent from the foregoing that Dr.

Wood's versatility served him advantageously in most instances; but there were disappointments too. Devotion to his family was outstanding; still his written recollections indicate the father's dominating character. For instance, he mentions the latter's "strong sense of being the head of the house." None the less, respect, admiration, and affection for his parents are constantly evident in his journal. He adored his wife and daughter; he was congenial with, and proud of his son. A trait of shyness was apparent too in Dr. Wood's make-up. This is evident in one of his family letters in which he states that he "did not make friends easily." Punctiliousness, however, was ever apparent in his demeanor, and innate courtesy was a virtue with him. Not an "outgoing type," affectionate companionship seemed set apart for his family and immediate close friends, but his associates and students spoke feelingly of him, recalled his homely sayings and what occasioned them. The deeply religious side of Dr. Wood's life was evidenced not alone by his church attendance and executive responsibility for it, but by the intensity and impact of the thought that he gave to it. This facet was entirely devoid of an "holier than thou" attitude. Dr. Wood's expression of faith and doctrine was interwoven with philosophical comment, evident in many letters to his wife and daughter, and in his written memoranda on such subjects.

Dr. Wood will be well remembered by those who knew him. It is touching to note that at the baccalaureate service of the 1959 class at the Philadelphia College of Pharmacy and Science, the altar flowers were placed there "in memory of Dr. Horatio C. Wood, Jr."

Memoir of Donald Guthrie (1880–1958)*

By HUGH ROBERTSON, M.D.

DONALD GUTHRIE, perfectionist and champion of the importance of little things, died in Sayre, Pennsylvania, the little town which he made famous, on October 30, 1958, aged 78. He was born in Wilkes-Barre, Pennsylvania, less than a hundred miles away, on June 23, 1880. His mother, Sara Hollenbach Wright, was the daughter of a pioneering industrial family; his father, George Washington Guthrie, was a famous surgeon, friend of the Mayos, and a founder of The American College of Surgeons.

At twenty-one (in 1901), Donald Guthrie graduated at Yale University (Ph.B.) and entered the Medical School of the University of Pennsylvania. In 1905, he had his M.D. and returned to intern with his father at the City Hospital in Wilkes-Barre. The fashionable thing would now be a grand tour of the European surgical clinics, but young Guthrie was fascinated by the work of two brothers, friends of his father's, in a small town in Minnesota. This was in 1906. William H. Mayo, aged 45, and his brother, Charles, 41, were too busy doing big things in a simple and unassuming environment to realize that in a few short years they and their little clinic would be world-famous. Donald Guthrie was the first "Easterner" to be formally trained at the Mayo Clinic. "Formally" is not quite correct—"They just put me to work—and I mean work", said Guthrie later; "There were few hands at Rochester in those days, and little things were done promptly by the first person at hand." "No one trained in our wards", Will Mayo explained, "could see or smell a soiled dressing without then and there examining the wound and putting a fresh dressing on it. He didn't tell someone else to do it or leave orders to have it done." This simple attention to little things became a part of Donald Guthrie's life.

In 1910 (The American College of Surgeons was founded in 1913), Donald Guthrie, Yale graduate, handsome, prosperous and well-trained, was ready to go out into the world to seek his fortune. The family had friends in Boston, New York, Philadelphia and Chicago who begged him to join them. But Guthrie had discovered the joy of self-accomplishment, and chose a little railroad town in Pennsylvania (Sayre) as the right and proper community for his life's work. There he took over the management of the struggling little Robert Packer Hospital.

George Hawk, who became his life-long associate, liked to say that when Donald Guthrie went to Sayre in 1910 he got:

1. An inclement winter.
2. A hospital housing 15 patients, in an 1880 railroad tycoon's decadent grand residence.
3. A small dispensary.
4. One wheel chair.
5. One intern (George Hawk).
6. No administrator.
7. A $35,000 debt.

The fifteen-bed hospital has grown to a nationally known diagnostic and surgical clinic. Through association with the Graduate School of Medicine of the University of Pennsylvania and the Hahnemann Medical College, the little town in Northern Pennsylvania became an off-campus post-graduate center, and a very exciting one. In 1916 Donald Guthrie married Emily Franklin Baker of New York; she, gay and social, proved a most exceptional hostess. Sayre was a convenient overnight railroad stop between New York and Cleveland or Chicago; this fact, combined with the famed Guthrie hospitality, brought a constant stream of famous doctors to the clinic. The interns

* Prepared and published at the request of the Council of the College of Physicians of Philadelphia.

and residents met these visitors informally in the library of the Guthrie residence, shook hands and chatted with them, and felt the sympathetic touch of greatness that would affect them forever after. More than one hundred and fifty men have qualified for specialty boards and advanced medical degrees under Donald Guthrie's tutelage, but the personal contact with Donald Guthrie's galaxy of friends gave a new majesty to the routine preparation for the practice of a specialty.

Donald Guthrie gloated over the success and well-being of his protegés. He had no children of his own, so he devoted himself to his associates and assistants. He built himself a small empire in the little railroad town, using perfection as a yardstick and friendliness as cement. He was czar. He made the plans and gave the orders. He was a cruel taskmaster but his fairness and quick appreciation of a deed well done made those who worked with him love him.

Typical of his concern in the development of his staff was his establishment of the "Guthrie Clinic Bulletin" as a vehicle for the printing of papers prepared by interns and residents. Many now-famous surgeons and other medical specialists will remember as long as they live the thrill of seeing their first scientific essay in print in "The Bulletin." He sent his staff members to every important scientific meeting with arrangements for train and hotel reservations made in advance in the most minute detail. (All one had to do was to be at the station in time for the train). At the meetings one took copious notes, for one knew that he must give a detailed report at the next weekly staff meeting.

Staff meetings at the Guthrie Clinic were amazing things to outsiders. Nearly always there were talks by famous doctors (brought to Sayre by Guthrie hospitality), interspersed by essays and reports of studies by the newest of interns. Following the papers there would be a general discussion by the interns, famous guests, staff men,—all. And then the whole transaction would be published in "The Bulletin".

Honors came incessantly. He became President of his local County Medical Society four years after settling in Bradford County. In 1932 he was President of the Medical Society of the State of Pennsylvania. He traveled extensively and made friends wherever he went. He befriended Hungarian surgical students and received very special honors from the Budapest Surgical Society. The Academy of Medicine of Rome and the Brazilian Surgical Society honored him with fellowships. He was a member of the Board of Governors of The American College of Surgeons. He was a founder of the American Board of Surgery. His social clubs were the Yale and Union in New York, and the Rittenhouse and Racquet Clubs in Philadelphia. He was elected to many medical and surgical societies and associations. His postgraduate teaching brought him professorships at the University of Pennsylvania and Hahnemann Medical College.

In time Charles H. Mayo sent his son, Charles, to Sayre to intern with Donald Guthrie. Grandson Charles is presently at Sayre.

Those who came under the influence of Donald Guthrie will remember him longest because of his humanity. Upon his return from a visit to Budapest, he brought with him a specially built music box so that patients, awaking suddenly from anesthesia in strange and frightening surroundings, might be lulled and soothed by the tinkle of "The Skaters' Waltz". To Donald Guthrie, little things were very important.

Memoir of Stirling Walker Moorhead (1882–1959)*

By GEORGE M. LAWS, M.D.

DR. STIRLING WALKER MOORHEAD, son of a physician, was born in Philadelphia on April 22, 1882. He attended Blight Preparatory School in Philadelphia and the College of the University of Pennsylvania where he graduated in June 1902 with an A.B. degree. Like a good many of our classmates he spent most of the junior year in the Biological School and all the senior year as a first year student in the School of Medicine. He received his M.D. degree in June 1905. He was a member of Psi Upsilon, Alpha Omega Alpha, and the H. C. Wood Medical Society.

After two years' internship at the Hospital of the University of Pennsylvania he started clinical work in the Gynecologic Service and later transferred to Urology. He was an Associate in Urology in the Graduate School of Medicine from 1929–34, and Assistant Professor in the School of Medicine from 1931–41. He was also Urologist to the Howard, Methodist, and Fitzgerald-Mercy Hospitals in Philadelphia.

* Prepared and published at the request of the Council of the College of Physicians of Philadelphia.

He entered the U. S. Marine Corps in 1917 and served on active duty until October 1919. He was for a time with the 23rd Field Hospital of the 2nd Division in France and Germany. He was promoted from First Lieutenant to Captain during the war.

He was elected a Fellow of the College of Physicians of Philadelphia on January 2, 1924, and was a member of the Philadelphia Urological Society and of the American Urological Association. He was co-author of revisions of White and Martin's *Genito-Urinary and Venereal Diseases*, and of Davis' *Applied Anatomy*. He published numerous medical papers during his career.

Dr. Moorhead was an efficient and conscientious surgeon whose professional work won the admiration of his students and colleagues. In private life he was modest and retiring, never married, and lived his life at 1523 Pine Street, Philadelphia. He was always generous and loyal to his friends and associates. He accepted a terminal illness from malignancy with Christian fortitude and died on April 26, 1959.

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The Increasing Value of Medical Care*

By JONATHAN E. RHOADS, M.D., D.SC. (MED.), LL.D. (HON.)

Two years ago the bylaws of the College were revised to give the President of the College the option of presenting his Annual Report at the scientific meeting of the College or at the business meeting. Last year I continued the earlier practice of presenting it at the business meeting, and devoted my report to a review of the state of the College, its staff, its library, its finances, its membership, et cetera.

This year, instead of looking inside the College, I would like to direct your attention outside—to the world which the College serves and which is its raison d'être. So it seems more appropriate to report to the full session than to the business meeting.

We have heard for three decades about the rising cost of medical care, beginning with the national Committee on the Cost of Medical Care in 1932. Perhaps it is this long-continued emphasis on cost which has led me to address my remarks tonight to "The Increasing Value of Medical Care". An appropriate adjustment in perspective may be encouraged by briefly focusing the spotlight, not on costs, but on the increasing usefulness to the patient of the medical care he now receives.

The facilitation of research by providing ready access to published knowledge of the medical sciences is a basic objective of our College library; and the diffusion of medical knowledge by the library, by the several lecture series, and by the *Transactions* is another of our most important aims. Thus, the overall increase in the value of medical care corresponds rather exactly with our purposes as a College.

The span of one lifetime—in this case the speaker's own—includes a number of events that show the speed and range of improved medical care. At medical school I was told the dramatic story of an intern—engaged to be married—who contracted syphilis on the hand while dressing an outpatient. This was in 1909 and so his hopes of marriage were completely destroyed. However, Ehrlich's discovery of salvarsan was on its way. The intern was among the first in this country to receive "606". His disease responded promptly and, so far as could be judged, completely, to the new remedy. He and his fiancée were able to marry and enjoy a normal life.

In 1919, as a youngster, I watched a chemistry student test urine for sugar in my father's office laboratory in our home. I was shown the yellow-red precipitate that formed on boiling with Fehling's solution, and I well recall my father's profound concern about the result. It meant that Mr. X would probably

* Annual Address of the President of the College of Physicians of Philadelphia for the Year 1959. Read 6 January 1960.

die within a few years—perhaps within a few months. The outlook then was more grim for the diabetic patient than for the average patient who develops cancer today.

Then came 1922, and insulin. Among the early diabetics to receive insulin was a young lawyer, named William B. Bell, destined not only to head the American Cyanamid Company as its President for three decades, but to lead it deep into the field of biologicals and pharmaceuticals through the purchase of Lederle Laboratories, and later to guide their tremendous development.

As a young medical student, I was told of a former schoolmate who had been ailing for some months, and was finally diagnosed as having pernicious anemia. I consulted the texts of that era only to learn that pernicious anemia was an incurable malady that led sooner or later to certain death. Minot and Murphy's discovery had not yet entered the medical texts, but it terminated my apprehension about my friend.

The more recent events are closer to our everyday consciousness: sulfanilamide with its control of "blood poisoning", as the streptococcal septicemias of our childhood years were called; sulfathiazole and sulfadiazine with their abolition of high death rates from lobar pneumonia; penicillin which replaced the sulfa series for most coccal infections, including gonorrhea, and proved so effective against syphilis that syphilology as a separate discipline has been lost sight of in many places. Streptomycin, the first drug specifically useful against tuberculosis, was isolated in 1943 by Selman Waksman. Its peculiar usefulness in tuberculosis was recognized somewhat later. In 1946, I was myself one of the early beneficiaries of this advance, under the care of Dr. David A. Cooper.

Still more recently we have witnessed an impressive victory over poliomyelitis by the development of vaccines and the institution of public health measures for their widespread use.

While specific drugs and vaccines comprise a very striking chapter in the increasing value of medical care, there are other chapters. At the time I went into surgery, it was thought by some that drug therapy would supplant it. However, surgery is still with us and we have seen gain after gain in the therapy of ulcers and in many types of carcinoma, including occasional successes with cancer of the lung and of the pancreas. There have been wide-scale decreases in mortality to which more physiological supportive therapy, better anesthesia, antibiotics, and better training of personnel, have contributed impressively. There has been developed successful treatment of the following conditions which three decades ago were generally incurable and some of them often fatal: constrictive pericarditis, sciatica due to ruptured nucleus pulposus, patent ductus arteriosus, coarctation of the aorta, Hirschsprung's disease, mitral stenosis, tetralogy of Fallot, interatrial and interventricular septal defects, saddle embolus, Leriche syndrome, aneurysm of the abdominal aorta, the thoracic aorta, and now of the aortic arch.

To some of these advances and to many others, Philadelphians have contributed significantly. Special tribute is due Dr John H. Gibbon, Jr., who pioneered the techniques which have made open heart surgery a reality.

One can quantitate the overall changes in longevity by reference to life insurance tables. Thus, the expectation of life at birth has risen in the United States from 46.4 years in 1910, to 57.4 years in 1930, to 68.3 years in 1950. While this improvement reflects a general rise in the standard of living and a number of public health measures, (some of which were instituted before 1910), it seems fair to attribute a great deal of it to the advances in medical knowledge which I have recited and to others like them.

However, life is not solely a matter of years. It has quality as well as quantity. What contributions have medicine and surgery made here? To mention a few, there are those birth anomalies compatible with life, such as hare lip, and cleft palate. Most of these are now corrected with lifelong relief from embarrassment and from handicapped communication.

Many causes of lameness have been overcome, as well as some causes of blindness and deafness. The miseries of the menopause have been mitigated by hormone therapy, and methods are available for correcting many hormone imbalances by substitution or ablation therapy. The pain attending postmenopausal demineralization of the skeleton has been strikingly relieved in many persons by judicious use of hormones.

Newer drugs frequently prevent the fits of the epileptic patient and others relax the tensions of the insane. Most of the pains due to obstruction to hollow viscera may be relieved by surgical means, and when other methods fail, the section of the spinothalamic tracts proposed by W. G. Spiller and carried out originally by C. H. Frazier, will often ease the final days of those succumbing to incurable cancer.

Thus, it can be demonstrated that medical science has contributed importantly to the quality of life as well as to its length. For these reasons, among others, I do not believe that we, as physicians, should apologize for the increased cost of medical care. We have a product that is different from the one our medical forebears could offer. It is vastly better, and to my mind it is worth its cost many times over both in terms of human values and in terms of economic values.

Certainly the major part of the increased cost is not in medical fees—nor should it be. Important parts of the forward progress—probably the most important parts—have come from non-physicians. As physicians, however, we are often confronted with assertions about the cost of overall medical care which imply that this increase is, if not our fault, at least distinctly regrettable. I believe we would do well to deny this implication. Any method that permits men to turn money into health—by which I mean real health, qualitatively as well as quantitatively—is a potential boon to mankind. We are all sooner or later patients ourselves, as well as doctors. In both capacities, I am sure we are deeply gratified that so many ways have been discovered to convert funds into physical well-being. That these great gains cost somewhat more need be no cause for embarrassment. Rather should we rally our patients and our public to hope for a further rise in health costs—so long as these are an index of further mastery over the diseases which beset our species.

It is the intent of this administration that the College of Physicians should serve an ever more important role in providing medical care of increasing value. To this end I expect to communicate further with you during the year as the specific needs of the College for this decade become clearer.

The College of Physicians of Philadelphia in Historical Perspective*

By RICHARD H. SHRYOCK, PH.D.†

ON THIS Fiftieth Anniversary of the dedication of the present building of the College one's thoughts go back to earlier days. It is a truism that this is the value of anniversaries. These are chronologic devices of our own making, and if we employed a different mathematical system —let us say, that used in circular measurements—major anniversaries would occur each 60 years rather than each 50 or 100. No matter: whenever we set these occasions, they at least momentarily inspire a backward glance. And that glance may do more than satisfy curiosity about antecedents; it may provide a sense of accomplishment in the past which gives meaning to the present.

This College is one of a group of permanent Philadelphia institutions which emerged during the latter half of the eighteenth and the early years of the nineteenth century. You will pardon local pride, if I point out that the founding of a learned body in Philadelphia at that time was usually synonymous with the first establishment in English-speaking America. One can illustrate this by recalling that the College was located during most of its early years at 104 South Fifth Street, next door to Independence Hall. The latter building now impresses visitors more than does the rest of the short square or block extending from Chestnut to Walnut. Yet along this street, about 1800, were located the first scientific society, the first circulating library, the first museum, the first medical school building and the first dispensary in this country.[1]

The College, as the earliest medical academy, was thus planted within a whole neighborhood of "firsts"; and I doubt if any other American site can equal this one square in its significance for our cultural as well as for our political history. Perhaps we should organize a South Fifth Street Antiquarian Society and put up monuments or plaques all over the place. Within reasonable limits, however, the National Park Service will probably take care of the matter.

The juxtaposition of the various bodies mentioned was no accident. It was, rather, an outward and visible sign of an inward grace—of a striving toward progress in the arts and sciences which characterized Philadelphia as well as other Western centers during the era of enlightenment. Such efforts were inspired by a dominant optimism—by a belief in the near-perfectibility of man and of his institutions. The medical version of this faith was a conviction that science could already prevent or cure many diseases and would overcome most others if only the medical profession were adequately trained and organized.

Medical optimism in Philadelphia, moreover, had been given a special lift by the American Revolution. That upheaval had opened vistas of a special, manifest destiny for American medicine.[2] Today, any connec-

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† Librarian, American Philosophical Society. Honorary Fellow, College of Physicians of Philadelphia.

[1] There is general agreement on most of these "firsts", but it is recognized that such claims vary more with definitions than with dates. See, e.g., G. G. Simpson, "The First National History Museum in America", *Science*, n.s., vol. 96, 1942, pp. 261–263.

[2] On the relation of the Revolution to scientific activities in general, see the comprehensive study by Brooke Hindle, *The Pursuit of Science in Revolutionary America: 1735–1789*, Chapel Hill, N. C., 1956.

tion between the political events of 1776 and concomitant medicine seems rather remote, but it was not so to contemporaries. Dr. Benjamin Rush, for example, could hardly walk into Fifth Street without seeing Independence Hall, and its stirring associations were long uppermost even in his medical thought.

In the first volume of *Transactions* published by this College (1793), Rush envisaged the promising future of American medicine. "It is", he declared:[3]

> a general opinion that the condition of man in our world is mending. . . . Many disorders, once deemed incurable, now yield to medicine. . . . I am fully persuaded there does not exist a disease in nature that has not an antidote to it. And when I consider the influence of liberty and republican forms of government upon science, and the vigour which the American mind has acquired by the events of the late revolution, I am led to hope that a great proportion of the honor . . . of discovering . . . these antidotes may be reserved for the physicians of America.

Now Rush, more than any other one man, may be viewed as the founder of the College of Physicians. It is clear enough that he was inspired in this action by the blend of optimism and of patriotism which has been noted. Combined with such motivations was a realization of the advantages of operating within the largest and wealthiest of American cities. Philadelphia was to be made the medical as well as the political capital of the nation, and its leadership in the first of these spheres was to take form in a medical academy of national significance.

Less apparent but still important among the motives for founding the College was the professional objective. Just whom did Rush have in mind when referring to "the physicians of America"? His colleague John Morgan, who in 1765 had first proposed a medical academy, had been quite specific on this point. By "physicians", the latter had meant those who qualified by London standards; that is, those who held degrees and who practiced only internal medicine. Just as generals left trench-digging to privates, so—Morgan held—real doctors should leave such lesser matters as surgery to surgeons and drug-selling to apothecaries. The College which Morgan envisaged was to be composed only of physicians in this sense, and was to set them off from other practitioners by its own licensing authority.[4]

The truth was, however, that most American practitioners—like provincial medical men in England—held no degrees and indulged in all kinds of practice. They were, in London terms, not really physicians but rather surgeon-apothecaries, yet they were called "doctors" by courtesy.[5] Perhaps a subtle equalitarianism disinclined Americans to make formal distinctions within a professional field. In any case, the circumstances tended to obscure, for the public, the fact that they were served largely by what Europeans viewed as a second-class guild.

There has been no want of praise for the rank-and-file practitioners of the eighteenth century. Oliver Wendell Holmes, writing in 1860, thought of them as sound, practical men who had avoided all the theoretical nonsense of physicians. And Ruschenberger, writing later on the history of this College, had some kind words for the same group. But the real "M.D.s" of the 1700's were scornful in the extreme. Dr. Douglass of Boston had remarked in 1753 that "Frequently there is *more Danger* from the Physician, than from the Distemper"; Morgan, in 1765, had declared that even large towns harbored practitioners who were "in a pitiful state of ignorance"; and Dr. Stearns, president of the New York State Medical

[3] College of Physicians of Philadelphia, *Trans.*, I, 1793, xxxi.

[4] John Morgan, *A Discourse upon the Institution of Medical Schools in America*, Phila., 1765; reprinted Baltimore, 1937, *passim.*

[5] See chapter 1 in a forthcoming study by the writer, *Medicine and Society in America, 1660–1860*, New York, 1960. The New Jersey state medical society, oldest in this country, adopted a seal very similar to that of the London Society of Apothecaries; see Fred B. Rogers, "Opifer Per Orbem Dicor", *Jour. Med. Soc. of New Jersey*, vol. 51, 1954, p. 313.

Society—looking back in 1818—said that with few exceptions "the practitioners were ignorant, degraded and contemptible".[6]

One can understand why Dr. Morgan, feeling as he did, wished to make distinctions clear, and why he strove to superimpose upon the mass of practitioners an élite like that of London. At about the same time, as Whitfield Bell has pointed out, Virginia students at Edinburgh had gone further in urging that *all* practitioners in their province be required to meet the standards of physicians. In such proposals may be observed the beginning of a drive to eliminate second-class medical personnel—a drive which would characterize European as well as American professional history for more than a century thereafter.

In Great Britain, the movement finally took the form of seeking "safe, general practitioners" and in requiring apothecaries as well as physicians to measure up to this ideal. Not until the late nineteenth century was the effort reasonably successful.[7] In America, the same objective was confused by semantics—by the fact that all practitioners were called doctors and distinctions could be made only between well-trained men and those not so well-trained. After about 1830, most practitioners did take degrees; but many medical schools then made this process so easy that their graduates remained in effect an inferior guild. As late as 1876, an American authority could only claim that the average "doctor" in this country was "as well equipped for practical work" as was the English apothecary or the German *Secundär Artz*.[8] Indeed, the struggle to raise standards in average practice was not successful in any marked degree until the period of the Flexner Report, which some of us can still remember.

This digression into later history provides background for the question: Was a desire to raise professional standards one of the motives for the establishment of the College of Physicians in 1787? The idea appeared, among the original objectives, only in a rather vague statement about the cultivation of "order and uniformity in the Practice of Physick".[9] No immediate effort was made to secure licensing authority for the College nor was any reference made to distinctive forms of practice for physicians. Indeed, during the first half-century, any reputable practitioner could apply for membership.

Yet it may be noted that the great majority of the early Fellows held medical degrees. The original membership of twenty-five probably included, as a matter of fact, most of the "M.D.s" in Philadelphia.[10] Such men not only possessed the formal education desired by Morgan, but were also following his precepts in turning over drug-selling to pharmacists. They did not necessarily decline to practice surgery; but it is interesting to recall, in this latter connection, that several local men best known for their surgery—Physick, Dorsey, Gibson—were *not* made members.[11] It would seem, then, that the College did in some measure set physicians (in the London sense) apart from other practitioners in the community.

The fact that the College did not immediately seek licensing power may have involved nothing more than discretion. Morgan's early appeal for an academy possessing this power had been rejected by the Proprietor, in part because of a disinclination to grant such authority to any private body. The public was apt to view a monopoly of licensing as making for an actual monopoly in practice, and sus-

[6] See chapter mentioned in note 5, above.

[7] Charles Newman, *The Evolution of Medical Education in the Nineteenth Century*, London, 1957, chapters 4 and 5.

[8] E. H. Clarke, "Practical Medicine", in *A Century of Medical Progress*, Phila., 1876, p. 19.

[9] Constitution of the College, in W. S. W. Ruschenberger, "An Account of the Institution of the College of Physicians of Philadelphia", *Trans.* of the College, Centennial Vol., 1887, p. 175.

[10] The first City Directory (1785) listed 46 men engaged in "medicine and surgery". If as many as 15 or 20 of them lacked degrees, which seems likely, the original 25 members of the College must have included most of the medical graduates in the city.

[11] See James Tyson, "Address of the President", *Trans.*, 3 ser, XXXI, 1909, p. 400; Francis R. Packard, "The College from 1887 to 1925", *Trans.*, 4 ser., IV, Suppl., 1937, p. 91.

pected that all the professional talk about better standards was but a mask for the selfish interests of physicians. State legislatures would subsequently grant *de facto* licensing rights to almost any so-called medical school which requested them. Should not a free people have a free choice among medical men of all sorts: were not they entitled to life, liberty and the pursuit of quackery if they so desired?

The College's original silence on licensing matters may therefore have been circumspect, but its real desires were made clear when a State legislative committee asked its advice on the subject in 1794. The Fellows immediately recommended that men holding medical degrees should be entitled to practice but that all others should be examined by the College. The latter, it was proposed, should likewise examine and approve apothecaries (pharmacists). In both cases, the College was to set penalties for practicing without its approval.[12]

These proposals died in the Legislature, presumably because of the public attitudes mentioned. It has often been pointed out, as by Dr. S. Weir Mitchell late in the last century, that physicians enjoyed greater prestige in Philadelphia than in most American cities. Yet in this case, their influence was not sufficient to attain for the College a power that Boston "doctors" actually did secure for the Massachusetts Medical Society. Perhaps the prestige of the College did not reach far enough "up state".

In addition to professional goals, the College at once announced scientific objectives and made some efforts to attain them. With a gift of some of Dr. Morgan's books in 1788, it began to collect a small library; and in 1793, it brought out a first issue of *Transactions*. The intention was to publish original observations, at a time when no American medical journals had yet been established.

The chief scientific purpose as originally stated was to encourage the study of native diseases and of native drugs.[13] This idea seemed sensible enough at the time, since Americans had done excellent work on native plant forms and may have expected to do as well with *medical* taxonomy. Moreover, descriptions of disease were then so inexact that men may often have thought they were encountering entities peculiar to their own country. And they were the more apt to do so because of the nationalistic fervor of the 1790's. Rush was not the only physician who took pride in the thought that even diseases were "made in America", and that their particular remedies also would be found here. But since it eventually proved that the United States could boast of few peculiar maladies, these objectives were gradually lost to sight. Meantime, the library remained small, and no further issues of the *Transactions* appeared for nearly half a century. Research eventually developed in medical schools and hospitals rather than in academies, and the results appeared in an increasing number of medical journals.

Although the College did not develop its own investigations, the pre-eminence of its early members enabled it to serve the national as well as the local profession in various ways. Denied licensing authority, it could still seek uniformity in practice by setting up standards in pharmacy. As early as 1788, it sent letters on this matter throughout the country, and the subsequent publication of a national pharmacopoeia owed much to its efforts. So, too, did the revisions of this guide made in 1820 and in ensuing decades.

The early College also served the public interest in bringing the latest medical knowledge to bear on problems of immediate concern. Thus, at Rush's urging, it advised the State legislature of the medical evidence against distilled liquors and asked for a stricter control of this evil; and in 1790 it memorialized Congress on the same subject. During the tragic yellow fever epidemics of 1793–1800, the College acted as an informal board of health—advising local and state officials on methods of preventing and treating the disease. And when a formal board was set up, the College continuously urged that medical mem-

[12] Ruschenberger, n. 9 above, p. 67.

[13] *Ibid.*, 175.

bers should be appointed to it and given some tenure in office.

Unfortunately, the Fellows divided sharply on what measures *were* best against yellow fever. The majority held that the disease was imported and should be met by isolation procedures; but a minority, following Rush, ascribed the disease to local origins and demanded sanitary measures to combat it. The quarrel also involved modes of treatment. In 1797, the minority withdrew from the College over these issues and organized the short-lived, rival Academy of Medicine. One can understand Rush's feelings—Dr. Kuhn had called his purgative "a murderous dose" and Dr. Hodge termed it "a dose for a horse".[14] Obviously, professional amenities were not then what they are today. This schism between the majority and Rush's followers was a serious blow to the College and it is a wonder that the institution survived.

Thereafter, indeed, the first enthusiams seem to have waned and the College entered an era of lessened zeal and activities. The lapse of its *Transactions* pointed in that direction. So, also, did the small number of Fellows and the slight average attendance at meetings. The latter figure had been 14 in 1787; but between 1805 and 1812, it fell to about 6.[15] Subsequently, in an effort to stimulate interest, each Fellow was required to read a paper at regular intervals. But more than one member paid a substantial fine rather than make this effort. It is no wonder that so small and inactive a group remained content for decades with their single room in the Hall of the Philosophical Society.

To some extent, the relative inactivity until mid-century resulted from changes within the profession and within medical science. The original lights of the College had been such men as Rush, Morgan, and Kuhn, all famous for European training and all devoted to impressive theories or "systems". But by the 1820's European training no longer conveyed such prestige, and speculative theories were completely outmoded.

The reaction against Rush was particularly severe. Writing of his essays several decades later, Josiah Bartlett declared that "... in the whole vast compass of medical literature, there cannot be found an equal number of pages containing a greater amount... of utter nonsense and unqualified absurdity".[16] Even the Philadelphian's patriotic zeal was ridiculed as the Revolution receded into the past. Oliver Wendell Holmes, taking Rush apart on that score, remarked that the latter:[17]

> could not help feeling as if Nature had been a good deal shaken by the Declaration of Independence, and that American art was getting to be rather too much for her,—especially as illustrated in his own practice.

It took time for a younger generation of Philadelphia doctors to attain anything like the standing once enjoyed by the founders of the College. And in the 1830's, when men like Nathaniel Chapman and Professor Samuel Jackson were becoming nationally known, the College no longer enjoyed the verve that comes with pioneering and with a unique position.

The subsequent revitalization of the College may be dated from about 1840. This may be ascribed, in large part, to the continued growth of Philadelphia as a medical center. No longer unique in this respect, the city became, nevertheless, the chief medical emporium of the nation. It possessed, by 1850, three regular medical schools ("Penn", Jefferson, and the Pennsylvania College), along with a homeopathic school (Hahnemann) and—of all things—a Woman's Medical College. Faculties expanded, hospitals multiplied and great names—Chapman, Dunglison, Gross—appeared once more within the College of Physicians.

Reflected in these developments was not only the growth of the city and of particular

[14] *Ibid.*, 59

[15] *Ibid.*, 83.

[16] Bartlett, *The Philosophy of Medical Science*, Phila., 1844, p. 225.

[17] Holmes, "Currents and Counter-Currents in Medical Science", in collected papers of same title, Cambridge, Mass., 1861, pp. 11 and 26f.

institutions, but also an increasing guild consciousness among medical leaders. Alarmed by the spread of sectarianism and of proprietary schools even within the regular profession, such men finally organized the American Medical Association in 1847. The College took no active part in this movement but Chapman became the first president of the "AMA", and he and other Fellows were influential in its affairs.

In seeking to reform medical education, protect public health and promote the interests of the regular profession, the national body of 1847 had a long way to go but it was at least on its way. Much of this activity was stimulated by advancing medical science, especially that of the "Paris school". Within another generation, German medicine would have an even greater impact, and would create those circumstances which made for the reform of the American medical profession as a whole.

In the midst of the professional developments of the 1840's, there was some clarification of the role of the College of Physicians in the Philadelphia setting. Clearly, it was not to be a licensing body, it was not to carry on research of its own, and it was not to serve as a health board or as an agency of social reform. Nor could the College longer set real physicians apart from other practitioners simply by including most of the first group within its own membership. As the number of medical students mounted, it was no longer feasible to elect most graduates of even the better schools. In 1834, applications for membership were stopped and thereafter men had to be nominated.[18] Fellowship thus came to imply individual recognition rather than guild status, and this in itself probably made for a stronger body.

Parenthetically, the College maintained its original policy of recognizing outstanding physicians throughout this country and abroad. Election to associate fellowship continued to be viewed by Americans as a national honor. The response was probably typified by the following letter, written by Dr. Richard Arnold of Savannah—one of the first secretaries of the "AMA"—in 1847:[19]

> I had the Honor to receive your letter . . . informing me that I had been elected an Associate Member of the College . . . I beg to return . . . my thanks for so distinguished an honor. . . . To Philadelphia our profession in other parts of the Union looks for the beacons to guide us onward. A Fellowship with such lights of our profession as exist among you is then a matter of honorable satisfaction.

What the College *could* do after 1840, as distinct from the functions which were no longer feasible, was to provide leadership and facilities for the expanding profession in Philadelphia. It could bring together, for example, the distinct and sometimes rival faculties of the different schools. It could also provide a central library, renewed publications, and a common forum for the discussion of both scientific and professional questions. All these functions developed gradually, but their beginnings can be traced back at least to the period under discussion.

The *Transactions* began to appear again in 1842 and had a somewhat complex history thereafter. Three volumes were issued between that year and 1850; after which a second series ran until '74. During the last sixteen years of the second series, arrangements were made to publish these materials in the *American Journal of the Medical Sciences*. A third series emerged in 1875, and this was finally followed in 1933 by the still-continuing fourth series.

Meantime, the library of the College began to grow. It remained in charge of volunteers until 1855; but the first regular librarian, T. H. Bache, was elected in that year. As late as 1850, the collections were smaller than those of the neighboring Pennsylvania Hospital (still at that time the largest medical library in the country); but by 1859, the College possessed some 4,000 volumes. Well before this, seeking room for its collection, the Col-

[18] Ruschenberger, n. 9 above, p. 131.

[19] R. H. Shryock, ed., *The Letters of Richard D. Arnold, M.D.*, Durham, N. C., 1929, p. 31.

lege had moved in '45 from Philosophical Hall to the Mercantile Library; and in '52 it had secured more space in the "Picture Room" of the Pennsylvania Hospital. But even the latter soon proved inadequate, what with the acquisition of many books and the need for adequate meeting rooms.

It was therefore decided that the College must secure a home of its own. Such an effort had proved fruitless two decades before, but in 1861 it was not blocked even by the outbreak of the Civil War. One need not go into the history of the building fund, but prosperous members—notably George B. Wood—made this a success.[20] The College moved into its new home at Thirteenth and Locust Streets in 1863. I remember the building well, crowded with book stacks in a day when it had been taken over by the Free Library. By my time it appeared cluttered and old-fashioned, but to the College in '63 it must have seemed modern and spacious in comparison with the room at the Hospital.

The move to Locust Street was made none too soon, for in the next year there was added the nucleus, more than 2,500 volumes, of the great Lewis Collection—subsequently augmented to 13,000 volumes. Thereafter, a number of members gave or bequeathed their professional books to the College; as did, for example, Charles D. Meigs, George B. Wood, and Jacob M. Da Costa, between 1882 and 1902. The permanent deposit of the Samuel D. Gross Library of the Philadelphia Academy of Surgery was another important acquisition. Meantime, certain leading Fellows, especially William Osler, W. W. Keen and S. Weir Mitchell took pride in the library and sought special collections for it. In addition to current studies and journals, many works of historical value were acquired—including, by 1912, some 170 medical incunabula. At the latter date, the College's holdings—nearly 90,000 volumes as well as other materials—constituted one of the three largest medical collections in the country.

Since most medical schools had been self-supporting institutions which could rarely provide large libraries of their own, the College's holdings were of great service to the Philadelphia area. The collections continued to grow through purchases as well as gifts. (Back in the 1820's, the College had been unable even to pay its rent for years at a time; but by the latter part of the century, its finances improved with the increasing number and prosperity of its members). By 1934, to look ahead for a moment, the number of volumes reached nearly 175,000, and it stands today at over 200,000. Corresponding growth occurred in the categories of pamphlets and theses, to say nothing of a typical proliferation of journals currently received.[21]

The number of persons using the library annually was about 12,000 in 1908 and rose to about 14,500 by 1932, but is today little higher than the first of these figures. As Dr. McDaniel points out, the lack of visitor growth is easily accounted for by the relatively recent growth of certain of the medical-school and hospital libraries, and by increasing resort to inter-library loans. The latter procedure seems to have been employed only since 1935. During the past year, some eighty bodies borrowed ten or more volumes apiece, and seven of these were each loaned more than four hundred items. Such borrowers were distributed as far as Florida and California, but the heaviest demands naturally came from the local area.[22]

Such historically-minded Fellows as Francis R. Packard, David Riesman, and Edward B. Krumbhaar took a special interest in the library after about 1920, and the College owes much to them as well as to other benefactors. So, also, is it indebted to such of the past librarians as Robert Bridges and Charles P. Fisher, and particularly to the recent policies carried out by Dr. McDaniel and by Mr. Morse in making materials as accessible as possible to readers.

[20] Ruschenberger, n. 9 above, pp. 190f.

[21] Ruschenberger notes the growth of the library down to 1886; for the next fifty years, see Packard, n. 11 above. The figures given by the former, however, are not entirely accurate, and Dr. McDaniel has kindly corrected these where necessary.

[22] See Mr. Morse's Report of October, 1959.

While the library was expanding, the College provided a forum for the discussion of scientific problems. Before the present, special sections were organized, such discussions usually occurred at general meetings in connection with committee reports or with stated papers.[23] During the latter part of the nineteenth century, the scientific tempo was quickening, and no such lassitude appeared as had characterized the small gatherings of the early 1800's.

In the attention accorded to matters of professional or public-health concern, it is clear that interest in these areas was continued though less direct than in an earlier day. One may cite, by way of illustration, the lively debate which occurred in 1894 when Dr. Lawrence Flick urged that tuberculosis be made a notifiable disease. Although Koch had demonstrated the role of the tubercle bacillus some years before, Flick was overwhelmed by the opposition. Dr. Osler, for example, still held that the disease was hereditary; and others remarked that the public was being unduly frightened by all the talk about germs and contagion.[24]

These discussions at the College, were there time to trace them, would doubtless provide a picture of changing concepts in medical thought and practice. And therein would lie one of the values of a comprehensive and critical history of the College, if and when this can be prepared. Such a study, in view of the historic role of the institution, would be a contribution to American social and cultural history as well as to the story of medicine itself.

The College remained on Locust Street for some forty-five years of increasing activity. But with the rapid growth of the library and the need for more space for meetings, these quarters also became inadequate. During the early years of the present century, there was another successful drive for a building fund and the present site was secured here on 22nd Street. Having just been involved in the throes of planning a new library myself, I can well imagine the blend of enthusiasm and concern which must have attended the construction of this building in 1908 and 1909. Its form has remained basically the same since that time, though further need for space led to the addition of the new stack wing in 1956. This improvement was made possible by a final fund drive which owed much to the leadership of Dr. Richard A. Kern and of Dr. T. Grier Miller.

All these efforts went into a building which, after the lapse of another fifty years, we are now apt to take for granted. It would be a rare edifice indeed, if those who use it have not discovered some things which they would have wished otherwise. Today, if a new building were planned, a different style of architecture might be employed along with the latest technology. But those of us who remember the preceding building can sense the thrill experienced by the Fellows at the dedication ceremonies in 1909. At long last, they possessed a home which was adequate and imposing. Look about you in this hall, and you will perhaps agree that it well symbolizes the dignity attained by the first of American medical academies.

[23] Under the by-laws, standing committees were long maintained on Theory and Practice, on Surgery, on Midwifery, on Diseases of Children, on Materia Medica, on Public Hygiene, and on Meteorology and Epidemics. The latter was abolished in the '70's, by which time interest in medical climatology had declined. It will be noted that most of the other committees related to nascent specialties.

[24] E. G. Price, *Pennsylvania Pioneers Against Tuberculosis*, Nat. Tuber. Asso., Hist. Ser., no. 6, New York, 1952, pp. 70 ff.

William Harvey Perkins Prize in Preventive Medicine

The first William Harvey Perkins Prize in Preventive Medicine, College of Physicians of Philadelphia, was awarded to Dr. Cyril F. Conway, Jr., at a meeting of the Section on Public Health, Preventive and Industrial Medicine on October 13, 1959. Dr. Conway, a 1959 graduate of Temple University School of Medicine, is now interning

Presentation of the first Perkins Prize. Left to right: Dr. Jonathan E. Rhoads, President, College of Physicians, Dr. Conway, Dr. William Harvey Perkins, Dr. Fred B. Rogers, Chairman, Section on Public Health, Preventive and Industrial Medicine.

at Nazareth Hospital. The prize, a certificate and cheque for $100, was presented by Dr. Perkins on behalf of the Section. The prize essay, "Tranquilizers—Their Use and Abuse", was judged best among entries submitted by students enrolled in Philadelphia medical schools during the past year. Drs. Katharine R. Boucot, John J. Hanlon and Tom F. Whayne read the papers submitted in the annual contest.

At the award meeting, Dr. Heinrich Brieger, Professor of Industrial Medicine and Director of the Division, Jefferson Medical College, and a professional associate of Dr. Perkins for the past 15 years, paid tribute to his distinguished colleague. Dr. Perkins, who recently retired as Professor of Preventive Medicine and Department Head at Jefferson, also served as Dean of his *alma mater* from 1941 to 1950. His book, *Cause and Prevention of Disease* (1938), was an important contribution to the science of preventive medicine. Dr. Perkins formerly served as a Presbyterian medical missionary in Thailand, where from 1926 to 1930 he was Professor of Medicine and Director of Clinics at Chulalangkarana University. He received the Order of the White Elephant from the King of Siam for his valuable service.

Before returning to Jefferson, Dr. Perkins also was Professor and Director of the Department of Preventive Medicine and Director of the Hutchinson Memorial Clinic, The Tulane University, New Orleans, Louisiana. In an Anders Lecture at the College of Physicians of Philadelphia in 1951 on 'The Value of Health Centers to the Community', Dr. Perkins forecast community health centers such as the ten units now an integral part of the Philadelphia Department of Health. He was designated emeritus rank at Jefferson Medical College on July 1, 1959. The medical student essay contest inaugurated in his honor last year began a series of lasting value to the growing discipline of preventive medicine.

William A. Steiger, *Clerk*

Dr. William Harvey Perkins—A Tribute[1]

By HEINRICH BRIEGER, M.D., D.P.H.[2]

In August 1958, the Section on Public Health, Preventive and Industrial Medicine of the College of Physicians announced the establishment of the annual William Harvey Perkins Award for the best essay on a subject pertaining to Preventive Medicine and Public Health submitted by a student in any of the five Philadelphia medical schools. This award is given in honor of Dr. William Harvey Perkins, Fellow of the College of Physicians.

Doctor Perkins has been student, professor and dean of The Jefferson Medical College, and this institution feels itself honored by the establishment of an award that bears the name of one of its most outstanding and best-known members. Dean Sodeman of Jefferson Medical College was anxious to be present today, but, unfortunately, has been called away. He therefore has asked me to represent him. Naturally, having been so closely associated with Doctor Perkins for many years, my thoughts and words will be rather personal, but I have no doubt that all who really know Doctor Perkins would express more or less the same information.

Doctor Perkins entered Jefferson Medical College as a student in 1913. Following his graduation and internship at Jefferson Medical College Hospital, in 1918, he served as First Lieutenant in the Medical Corps of the United States Army in France. From 1919 to 1923, Doctor Perkins was a medical missionary in Siam, now called Thailand. Upon his return to this country, he worked as an assisting pathologist at the Philadelphia General Hospital and the Philadelphia Zoological Garden, and as an Instructor in Medicine at Jefferson Medical College; at about the same time, he was appointed Fellow in Medical Education of the Commonwealth Fund of New York. Impressed by Doctor Perkins' successful activities in Siam, the Rockefeller Foundation, in co-operation with the Siamese Government, offered him a Professorship at the Medical School of the Chulalangkarana University in Bangkok. As a Fellow in Medical Education of the Foundation, Doctor Perkins first visited medical schools in the eastern part of the United States, London and Paris. From there, he left for Bangkok in 1926 to assume his duties as Visiting Professor of Medicine. In recognition of his accomplishments, he was awarded the decoration of the Order of the White Elephant by the King of Siam. Doctor Perkins returned to the United States in 1930 to become Instructor in Medicine at Tulane University School of Medicine in New Orleans. In 1931, he was made Professor of Preventive Medicine at the same medical school. A call from Jefferson Medical College to assume the duties as Dean and Professor of Preventive Medicine brought Doctor Perkins back to his alma mater in 1941. Illness forced him to retire as Dean on November 6, 1950, but he remained Professor of Preventive Medicine and Head of the Department until his resignation on August 31, 1959. While serving as Dean, he received the honorary degree of Sc.D. from Franklin and Marshall College, and of LL.D. from Dickinson College.

These brief biographical data alone indicate the recognition and respect that have been accorded Doctor Perkins' high professional qualifications. They should be read, however, in the light of their full significance. Creative and workable ideas, new and Doctor Perkins' own, have inspired his activities. When he was in Thailand, he organized and developed

[1] Read before the Section on Public Health, Preventive and Industrial Medicine, College of Physicians of Philadelphia, 13 October 1959.

[2] Professor of Industrial Medicine and Director of the Division, Jefferson Medical College, Philadelphia 7, Pa.

medical education and also practical preventive medicine throughout the country. He is still remembered and revered there. After his return to the United States, he developed teaching programs in Preventive Medicine when this discipline was still young in this country; the establishment of a Health Maintenance Clinic for the teaching of Clinical Preventive Medicine at Tulane University was such an outstanding innovation. Later on, in 1951, in a memorable speech before the Association of American Medical Colleges, he showed a way out of confusion and to a promising future of training medical students in Preventive Medicine. Doctor Perkins forecast early the establishment of Community Health Centers. As Dean of Jefferson Medical College he created a modern medical school, laying the foundation of what Jefferson Medical College is today. He organized and integrated the teaching of Preventive Medicine, and once again founded a Health Maintenance Clinic. His book on "Cause and Prevention of Disease," published in 1938, was one of the first comprehensive books on this subject.

The William Harvey Perkins story would be incomplete if no mention were made of the wide range of his not strictly professional intellectual interests and activities. These are not simple, time-filling hobbies; the same thoroughness, searching, and critical attitude shown in his professional work distinguish them. Doctor Perkins is an expert on Darwinism; the speech and the exhibition presented at Jefferson Medical College on the occasion of the Darwin Centenary (1959) are a splendid testimony to it. Philosophy, history, and so many other subjects interest him profoundly —and even his topical stamp collection has a scholarly flavor.

Last but not least, it must be said that Doctor Perkins' Anglo-Saxon self-discipline and reserve cannot hide the fact that he is rational but feeling, critical but understanding, not considering himself superior but always ready to advise and to help, and, in the best sense of the word, a very witty and entertaining companion.

Along with congratulations to the recipient of the Prize should go the request that he and all future winners of the award should strive to emulate Doctor Perkins, verily a gentleman and scholar.

Supplemental Catalogue of Medical Medals, Badges and Coins in the College of Physicians of Philadelphia*

By ELLA N. WADE

PERSONAL MEDALS

974 AGASSIZ, Dr. Jean Louis Rudolphe (1807–1873) Cambridge, Mass.

Ob. Head to right. Behind, AGASSIZ. Below, W. BARBER. SC

Rev. TERRA MARIQUE DUCTOR INDAGATIONE NATURAE In circle, tied laurels with eight berries. Above, between their tips an antique lamp. In center of field, united by a band, two crossed and inverted torches resting on a strip of earth. Above them NA 1807. Below, OB 1873 Ex. Crossed and drooping branches of bay.

64 mm. Bronze.

825 ALDROVANDI, Dr. Ulysse (1522–1607) Bologna, Italy.

Ob. ULYSSES – ALDROVANDUS Bust to right. Below, PEUVRIER F.

Rev. NATUS / BONONIAE / IN ITALIA / AN. M.D.XXVII. / OBIIT / AN. M. DC. V. / – / SERIES NUMISMATICA / UNIVERSALIS VIRORUM ILLUSTRUM / – / M.DCCC. XXIII / DURANT EDIDIT.

41 mm. Bronze.

1040 AUDOUARD, Dr. Mathieu Francois (1776–1856) Paris, France. Surgeon-in-Chief of French Army.

Ob. PIETAS – GALLICA Recumbent figure with civic crown and shield of Barcelona. Upon her a flying spirit pours oil from a vase. Faith and Hygeia aid her. In rear the city walls. Ex. SAEVIENTE IN BARCINONAM / PESTILENTIA / MDCCCXXI Signed, GAYRARD INV.

Rev. MORT. VEN ALEM. PALMAN. In field, V. VIRI. MEDICI / QVORVM. PRIMVS. OCCVBIT. / MAZET. / PARISET. / BALLY. / FRANCOIS. / AUDOUARD. / – / SANCTI MONILAES .II. / SANCTO. CAMILLA. DEVOTAE. / – / LVDOVICI. XVIII. REGNI. / ANN. XXVIII. At left a laurel and at right a palm.

48 mm. Bronze.

925 BAGLIVI, Dr. Georgio (Bachlidos) (1667–1707) Rome, Italy.

Ob. G. BAGLIVUS. MED. IN. ROM. ARCHIL. P. ET. SOC. REG. LONN. COLL. Bust to left. Behind bust, SV.

Rev. VNAM. FACIEMIVS. VTRAMQVE A pharmacist's tripod vase. At sides a mortar and pestle and retort.

40 mm. Bronze.

840 BARKER, Dr. Sir Robert (–1745) London, England.

Ob. ROBERTUS – BARKER Head to left. Below, A. DASSIER F.

Rev. Above, head of Hygeia. Below, head of Aesculapius and two serpents entwined. On either side a palm leaf. In field, DOCTOR MEDICUS / SOSIUS REGIAE SOCIET. / LONDINENSIS / MDCCXLIV.

55 mm. Bronze.

927 BARON, Dr. Hyacinth Theodor Sr. (1686–1758) Paris, France. Dean of Faculty of Medicine (1730–1734).

Ob. H. T. BARON F.M.P. ITERUM DECANO 1733–34. Bust to right.

Rev. MAJORUM SECANTUR VESTIGIA. To left, a table with shield of Faculty against side. Upon it an autopsy. To right, the amputation of a leg. Ex. BACCAL. OPERA ANATOM. / ET CHIRURGICA / EXERCENTES / 1733. Milled.

29 mm. Bronze.

1055 BELOT, Joseph

Ob. Head to right. To left under neck, JEAN VERNON

Rev. In center square part of an x-rayed body showing skeleton. Above, A / J. BELOT To left of the picture, SES / AMIS / – / HOPITAL / STLOVIS / – / 1910 To right of picture, SES / ELEVES / – / ELECTRO / RADIOLOGIE / – / 1938 Below picture, PREMIERS APPARELILS / DE PROTECTION MCMII / PREMIER TRAITE DE / RADIOTHERAPIE MCMIV / ATLAS – DANOTOMIE ET DE / RADIOLOGIE RADIOGRAPHIQVES / – – – / – –

80 mm. Bronze.

* For the original catalogue, see: Wade, E. N., Medical medals in the collection of the College of Physicians of Philadelphia, Bull. M. Library A. 32: 177–213, April, 1944.

833 BERZELIUS, Dr. Baron Jons Jakob von (1779–1848) Stockholm, Sweden.

Ob. Rosette 10. IAC. BERZELIVS rosette NAT. OSTROGOTH. D.XXM. AVG. MDCCLXXIX Head to left. Below, W. KIRCHNER F. / G. LOOS DIR.

Rev. PONDERA ET NVMEROS INVESTIGAVIT. Chemical scales. Ex. MDCCCXXX
41 mm. Bronze.

841 Ob. JOHANN. JACOB. BERZELIUS / NAT. XX. AUG. MDCCLXXIX. Head to left. Below, C. M. (ellgren).

Rev. CLARA IN LUCE – LOCAVII. Temple with radiant sun above. To left, CM.
41 mm. Bronze.

1052 Ob. JACOBUS BERZELIUS. / NAT. MDCCLXXIX . DEN . MDCCCXLVIII. Nude bust to right.

Rev. NATURAM JUSSIT VIRES PROFERRE LATENTES. A winged figure, leaning on an altar by which are scales and chemical apparatus, fills patera for seated Hygeia who feeds her serpent. Ex. FUNDATORUM SUPREMO LUGENS / MEDICO. SUEC. SOCIETAS. Signed P. H. LUNGREN FEC. – C. G. QUARSTROEM INV.
55 mm. Bronze.

828 BICHAT, Dr. Marie Francois Xavier (1771–1802) Paris, France.

928 Ob. XAVIER / BICHAT, Head to right. Below, GALL. F.

Rev. SOCIETE MIDECALE D'EMULATION DE PARIS Staff of Aesculapius erect. Ex. M. DCCC.VII
27 mm. Bronze. Silver.

838 Ob. XAVIER – BICHAT. Bust to left. Below, L DUFOUR F.

Rev. TRAITE / DES MEMBRANES / RECHERCHES PHYSIOLOGIQUES / SUR LA VIE ET LA MORT / ANATOMIE GENERALE / ET DESCRIPTIVE. / – / NE A THOIRETTE (JURA) / ANCIENNE BRESSE LE II 9 BRE 1771 / MORT A PARIS / LE 22 JUILLET 1802
40 mm. Bronze.

839 Ob. M. F. XAVIER – BICHAT. Bust to left. Below, L. DUFOUR, F.

Rev. NE / A THOIRETTE / EN M. DCC.LXXI. / MORT / EN. M.DCCC.II, / – / GALERIE METALLIQUE / DES GRANDS HOMMES FRANCOIS / – / 1826
40 mm. Bronze.

785 BILLARD, Dr. Charles Michael (1800–1832) Paris, France. Pediatrist.

Ob. Head to right. Behind, incused and in script, le Docteur Billard d'Angers / Pous son ami David / 1836

Rev. Blank.
152 mm. Bronzed stone copy of original, mounted on black plaque.

805 BILLROTH, Dr. Theodor (1829–1894) Vienna, Austria.

Ob. Head to left. Beneath collar, signed, GRINAUER. THEODOR. BILLROTH. GEB. 1829.1929.

Rev. In field 2 SCHILLING surrounded by coats of arms. Around periphery, REPUBLIK. OESTERREICH
29 mm. Silver. Milled edge.

835 Ob. THEODOR – BILLROTH. Bust facing and to left. Below, W. PITTNER

929 Rev. GEB. ZU BERGEN 26. 4. 1829 – GEST. A BRAZIA 6.2.1894 Beneath radiant star a floating angel waving band on which is ZUM ANDENKEN Below, chalice and drinking serpent irradiated, case of surgical instruments and palm branch. Signed, A. NEMECEK
32 mm. Bronze.

831 BLUMENBACH, Dr. Johann Friedrich (1752–1840) Göttingen, Germany.

Ob. SOLENNIB . MVN. PROFESS. QVINQVAGENARIIS Minerva placing three wreaths upon the altar. Owl at base. Ex. A. MDCCCXXVI Signed, G. LOOS D. PFEUFFER F.

Rev. An oval crown of stars. TRIVMVIRIS / IOANNI FRIDERICO / BLVMENBACH / 10. FR. STROMEYER / 10. GODOFR. EICHHORN / GRATA / GEORGIA AVG. On edge EX OFFICINA MONETARIA G. LOOS. G. LOOS. FIL. BEROLIN. Star.
42 mm. Bronze.

832 Ob. I. FR. BLUMENBACH NATO GOTHAE D. II MAII 1752 DOCT. GREATO GOTTINGAE D. 19 SEPT. 1775 rosette Bust to left in depressed circle.

Rev. NATURAE INTERPRETI OSSA LOQUI IUENTI PHYSIOSOPHILI GERMANICI D. 19 SEPT. 1825 rosette In depressed circle, three skulls (Caucasian, African and Mongolian). Below, G. LOOS DIR. H. GUBE FEC.
50 mm. Bronze.

789 BOURRU, Dr. Edmond Claude (1741–1823) Paris, France. Dean of Faculty of Medicine (1786–1892).

Ob. EDM. CL. BOURRU PARIS. FAC. MEDIC. PAR. DECAN Bust to left. Below, DV VIVIER.

Rev. CONCORDIA ET CONSTANTIA VINCENT Above and to the right, a seated female, with another at left, resting upon

fasces. In distance, a pyramid. Ex. 1786.87. Signed D.V.
29 mm. Silver. Milled edge.

826 BRODIE, Dr. Sir Benjamin Collins (1783–1862) London, England.
Ob. BRODIE (perpendicular) to right of head, facing left. Ex. W. WYON. R.A.
Rev. E. TENEBRIS. TANTIS. TAM. CLARUM. EXTOLLERE. LUMEN. QUI. POTUISTI. Pillar entwined by serpent; on base in relief Aesculapius seated with his staff. Above, a cock surmounting antique lamp being lighted by kneeling Hygeia. On plinth, W. WYON. R. A. Ex. CONSOCII. ET. DISCIPULI / GRATULANTES / MDCCCXLI
72 mm. Bronze.

834 BRUNS, Dr. Victor von (1812–1883) Tubingen, Germany.
Ob. DR. VICTOR VON BRUNS / GEB. 9. AUGUST 1812. – GEST. 18, MARZ 1883 Bust facing.
Rev. In crossed and tied laurels, DEM / GRÖSSTEN BILDNER / DEUTSCHER CHIRURGIE . / – : – / MÖGEN DIE FERNEREN GESCHLECHTER, / DANKBAR WIE WIR, / SEINER GEDENKEN / – . –
37 mm. Bronze.

967 BUCHANAN, Dr. Sir George (1831–1895) London, England.
Ob. SIR GEORGE BVCHANAN M. D. F.R.C.P.F.R.S. Head to left.
Rev. IN SALVTEM PVBLICAM AVDACIA ET INDVSTRIA Two erect females, one of them wards off death from prostrate person. Ex. Staff of Aesculapius and chalice.
55 mm. Bronze.

830 BUFALINI, Dr. Maurizio (1787–1875) Cesena, Italy.
Ob. A MAURIZIO BUFALINI CESENATI Head to left. Ex. Ex. I. GALLICO PROMOVEVA Signed, A. PIERONE F.
Rev. GLI / AMMIRATORI / – . – / FIRENZE / DECEMBRE N.D. CCLXIII / Staff of Aesculapius transversely.
50 mm. Bronze.

829 DEBUFFON, Count Dr. Georges Louis LeClerq (1707–1788) Paris, France.

837 Ob. G. L. LECLERCQ-DE BUFFON Bust to right in court dress. Below, E. GATTEAUX,
Rev. NE / A MONT BAR / EN M.DCC.VII / MORT / EN M.DCC.LXXXVIII. / – / GALERIE METALLIQUE / DES GRANDS HOMMES FRANCAIS . / – / 1817.
40 mm. Bronze.

970 CALLAHAN, Dr. John R. (1853–1918)
Ob. DR. JOHN CALLAHAN. 1853. 1918 Bust facing olive branch to left. To right, CINCINNATI / OHIO Ex. A TRIBUTE FROM HIS COLLEAGUES / IN RECOGNITION OF HIS ACHIEVEMENTS IN THE FIELD / OF ROOT CANAL THERAPY
Rev. THIS MEDAL / AWARDED BY THE / CALLAHAN MEMORIAL / COMMISMISSION / ribbon / IN RECOGNITION OF / THE HIGH MERIT OF THE SCIENTIFIC CONTRIBUTIONS / WHICH HE HAS MADE / TO HUMANITY AND THE / HEALING PROFESSIONS / plate for date, with branches behind.
58 mm. Bronze.

977 CANDOLLE, Alphonse de (1806–1893)
Ob. ALPHONSE DE CANDOLLE 1806–1893. Head to left. Below, GEORGES MANTZ, GENEVA 1894.
Rev. Tied palm branches and closed and open books. On left page of open book Geographic / Botanique / Raisonne To right, a shield, above which, IHS In shield, eagle to left and key and lock to right. Below, U.G.D.
61 mm. Silver.

844 CARDANO, Dr. Girolamo (1501–1576) Rome, Italy.
Ob. Scroll HEIR rosette CARDANVX rosette AETATIS rosette AN rosette XLVIII. Bust to right.
Rev. Group of merry-makers. Tree at left. Ex. ONEIPON
50 mm. Silver.

846 CERVI, Dr. Giuseppe (1663–1748) Parma, Italy.
Ob. IOSEPH. CERVI. EQVES. PARM. RECVM. HISPAN: ARCHIATER. ET. CONCIL: Bust to left.
Rev. In tied laurels, entwined by serpents, a portal with three towers. Two crowns above. Below, REGES / REGNVMQVE / TVETVR Ex. O. H.(ameram).
67 mm. Bronze.

847 CHIO, Dr. Vincenzo (1793–1840) Piedmont, Italy.
Ob. MEDICO – VINCENZO CHIO Head to right. Signed on neck, G. G(aleazzi) F.
Rev. In tied laurels PRIMO PROPAGATOR / DELLA / OMEOPATIA IN PIEDMONT / MORTO / MDCCCXLVI
43 mm. Bronze.

848 COLLEIX, Dr. Carlo (1808–) Turin, Italy.
Ob. Operating table to left with three instruments above. Ex. MILANO XXV. GENNAJO . / MDCCCXXXV Signed L. COSSA F.
Rev. A. C. COLLEIX / PRIMO OPERATORE / IN LOMBARDIA / COL ME-

TODO / LITOTRIRICO / DI HEURTELOUP / VARII LOMBARDI / SUOI AMMIRATORI / INTERPRETANDO / IL PUBBLICO VOTO / CONSACRANO / QUESTO SEGNO / DI RICONOSCENZA.
51 mm. Bronze.

845 CUSACK, Dr. James W. (1788–1861) Dublin, Ireland.
Ob. JAMES WILLIAM CUSACK BORN 1788 DIED 1861 Bust to right. Below, J. S. WYON SC.
Rev. DR. STEEVENS HOSPITAL DUBLIN Facade, Ex. Two armorial shields, upon one of which the Good Samaritan. At sides, CUSACK – PRIZE Below, FOUNDED 1861.
75 mm. Bronze.

784 CUSHING, Dr. Harvey (1869–1939) Baltimore, Md.
Ob. Bust to left in doctorate gown and shoulder bands. On panel below, HARVEY . CVSHING / MOSELEY . PROFESSOR . OF / SVRGERY / MCMXII . MCMXXXII In lower left corner, PAVL / ADRIAN / BRODEVR / Sc.
Rev. Blank.
Commemorating 20 years as Professor of Surgery.
60 x 89 mm. Composition.

842 CUVIER, Baron Georges Leopold Chretien Frederic Dagobert de (1769–1832) Paris, France.
Ob. G.L.C.F.D. – CUVIER. Head to left. Below, CAUNOIS F.
Rev. In laurel wreath, ELOGES / ANATOMIE COMPAREE . / DES OSSEMENTS E PARS (IL) RETABLIT / LES ACCORDS.. / A LA MORT ETONNEE IL REND / UN AIR DE VIE. / DELILLE. / NE AMONTNELIARD / ED 1769. / MEDAILLIER . / FRANCAIS CELEBRES / XIX SIECLE . / 1820.
42 mm. Bronze.

843 Ob. RENE JUST HAUY rosette A. L. DE JUSSIEU rosette GEORGES CUVIER. Three heads to right. Below, BORREL FECIT 1843.
Rev. DIRIGE PAR CHARLES D'ORBIGNY. In tied laurels DICTIONNAIRE / UNIVERSEL / D'HISTOIRE NATURELLE / REDIGE / PAR UNE REUNION / DE SAVANTS . / –
51 mm. Bronze.

979 DODOENS, Dr. Rembert (1518–1585) Malines & Leyden, Holland. Made about 1846 by Jouvenal. Physician to Maximillian II and Rudolph II. (Great Botanist)
Ob. R. DODOENS DE MALINES / 1518–1585. Bust to right. Below, JOUVENAL
Rev. LA BELGIQUE / OU L'ON AIME TANT LES FLEURS / SIHONORE D'AVOIR VU NAITRE / DODONAEUS QUI FIT FAIRE A LA / BOTANTIQUE SES PREMIERS PROGRES. / 1554, IL PUBLIE SON HERBIER A ANVERS . / 1568, IL REFUSE LA PLACE DE MEDECIN / DE LA COUR A MADRID . 1574, IL ACCEPTE / CELLE DE MEDECIN DE MAXIMILLEN II / ET SE REND VIENNE . 1580, IL / REVIENT DANS SA PATRIE ALORS / DESOLEE PAR LA GUERRE ET / BIENTOT IL VA PROFESSER / LA MEDECINE A LEYDE / OU IL MEURT EN / 1585. Above, 5 books separated by a vase of flowers and the staff of Aesculapius. On one of the books to right, STIRP. – HIST On the one on the left, FLORUM. HISTORIAE
47 mm. Bronze.

1039 EHRLICH, Dr. Paul (1854–1915) Frankfort-on-the Main, Germany.
Ob. PAVL (diamond) EHRLICH (diamond) AETATIS (diamond) ANNO (diamond) LVI (diamond) MCMX Bust to right.
Rev. Aesculapius, nude with serpent and chalice, walking to left. To left, CORPORA / NON / AGVNT—To right, NISI / FIXATA Ex. K. GOETZ
60 mm. Bronze.

851 FERNEL, Dr. Jean (1497–1558) Paris, France.
Ob. JEAN – FERNEL Bust with cap to left. Below, DEPAULIS F
Rev. NE / A CLERMONT / PRES BEAUVAIS / EN M. CCCC. XCVII. / MORT / EN M.D.LVIII. / – / GALERIE METALLIQUE / DES GRANDS HOMMES FRANCAIS . / – / 1822
40 mm. Bronze.

930 FEUCHTERSLEBEB, Baron Ernst von (1806–1849) Vienna, Austria.
Ob. ERN. L.B.A. FEUCHTERSLEBEN. FAC. MED. VIND. DEC. MDCCCXLV – XLVII Ex. NAT. 1806. OB. 1849 Signed C. RADNITSKY. F.
Rev. MEDICO. PHILOSOPHO. POETAE In two-thirds of circle statue of Isis entwined by serpent drinking from patera at left. A lyre leans against the statue. Ex. On tablet, COLLEGIUM. DOCTORUM / FAC. MED. VIND. / MDCCCLI
50 mm. Bronze.

850 FRASCATORIO, Dr. Girolamo (1483–1553) Padua and Verona, Italy.
Ob. HIERONYMVS – FRASCATORVS Bust to left, with tippet and cap. Below, NIC. CERBARA FEC.
Rev. In crossed laurels entwined by serpents,

POEMATE / AEGRIS ANIMIS / PHARMACO CORPORIB / SCIENTISSIME / PROPINATO
42 mm. Bronze.

931 FRANK, Dr. Johann Peter (1745–1821) Vienna, Austria.

1033 Ob. IOAN. PETER. FRANK – ET IOSEPH. FILIUS Two nude busts to left. Ex. DE MAYNO / CUR. Ex. TEST. Signed F. BROGGI F.
Rev. SCIENTIA AUXILIUM PRAESENS HUMANITATE COMITE In tied wreath of oak, the staff of Aesculapius.
52 mm. Bronze. Struck in 1842.

849 FREIND, Dr. John (1675–1728) Oxford, England.
Ob. IOANNES, FREIND. COLL. MED. LOND. ET. REG. S(ocietatis). S(ocius). In beaded circle nude bust to left. On neck sv (St. Urbain)
Rev. MEDICINA. VETVS. ET. NOVA. In beaded circle, an ancient physician clasping hands with another in cap and gown of the 18th century. Between them, retort, herbs, compasses, book and plummet. Ex. VNAM FACIMVS VTRAMGVE To left, sc
58 mm. Bronze.

786 FUCHS, ERNST (1851–1930) German Oculist.
Ob. Head to left. Below, ERNEST FUCHS / PROFESSOR DER / AUGENHEILKUNDE
Rev. Blank.
76 x 115 mm. Copy in stone.

932 GALILEI, Galileo (1564–1642) Pisa, Italy.
Ob. GALILEVS – GALILEI Bust to left. Below, NIC. CERBARA. F
Rev. In tied laurels, Jupiter's satellites and CONDITORI / DISCIPLINAE / AD. LEGES. MOTVS / ET. ASTRON. CERTO / COGNOSCENDAS / rosette
41 mm. Bronze.

933 GALL, Dr. Franz Josef (1758–1828) Vienna, Austria.
Ob. IOSOPHO GALL ORGAN. IN CEREBRO SCRVTATORI Bust to right. Below, A/S
Rev. DISTRIBVIT PARTES ANIMAE SEDESQVE Upon the staff of Aesculapius and a laurel branch, a skull phrenologically mapped. Ex. AVDITOR. BEROLINENS . / MDCCCV
40 mm. Silver.

852 Ob. F. JOSEPHUS – GALL Nude bust to right. Below, BARRE F.
Rev. AESCVLAPIO . SALVATORI A sick person in bed, from whom Aesculapius, with staff in left hand, drives away with right a bat and owl while with his right foot he crushes a toad. Behind him, a skull on pedestal. Ex. MDCCCXX. / B.F.

853 Ob. DR. FRANZ JOSEPH GALL AUS WIEN / IM FORSCHEN KUHN – BESCHEIDEN IM NEHAUPTEN Bust to right. On arm DR. LOOS Ex. GEB. 1758
Rev. DER SEELE WERKSTATT ZU ERSPÄHN / FAND ER DEN WEG A partially veiled skull upon a cube, on front of which are a torch and the staff of Aesculapius crossed. Ex. LEHRTE / IN BERLIN / 1805
39 mm. Silver.

790 GOETHE, Dr. Johann Wolfgang von (1749–1832) Weimer, Germany.
Ob. J. W. VON – GOETHE. Head to right after Kugelgen.
Rev. In tied and crossed oak branches, JETON
22 mm. Gilt.

961 GOSSE, Dr. Louis André (1791–1873) Geneva and Athens.
Ob. LOUIS ANDRE GOSSE Bust to left with fur collar. Below, C. RICHARD. F.
Rev. *NÉ LE 18 JUIN 1791 MORT LE 24 OCTOBRE 1873 * PESTE / SYSTEME PENITENTIAIRE / MALADIES RHEUMATOIDES / GOTTRE ET CRÉTINISME / REFORME DES QUARANTAINES / DEFORMATIONS DU CRANE / CHOLERA MORBUS / ERYTHROXLYON COCA / BAIN TURC / &.&. CITOYEN DE GENÈVE ET D'ATHENES
51 mm. Bronze.

854 GUENTHER, Dr. Daniel Eberhard (1750–1834) Duisburg, Germany.
Ob. D. E. GÜNTHER MED / DOCT. & ACAD. QUOND. DUISBURGENS. PROFESSORI Bust to left. Below, PFEIFFER . FEC. / G. LOOS DIR.
Rev. In tied oak wreath, MEDICO / EXPERIENTISSIMO / SALUTI-FERRO / INDEFATIGATO / PAUPERUM PATRI / CIVI OPTIMO / CIVITAS DUISBURGENSIS / D.D.D. KALEND. OCTBR. / M.D.CCCXXII
41 mm. Silver.

855 GUILLOTIN, Dr. Joseph Ignace (1738–1814) Paris, France.
Ob. JOS. IGN. GUILLOTIN SANTO MED. PAR. ACAD. PRAESES. Bust to right. On shoulder, D. Ex. 1807–08.
Rev. COLLIGIT UT SPARGAR Hygeia, with staff of Aesculapius, upon throne bearing double laurel wreath and two poppy heads. With a mirror she throws sun's rays upon a globe. Ex. MED. ACADEMIAE. PAR. /

J. I. GUILLOTIN PRAES. / 1809 Signed DROZ F.
27 mm. Silver.

934 Ob. JOS. IGN. GUILLOTIN SANTO MED. PAR. ACAD. PRAESES. Bust to right. On shoulder, D. Ex. 1807–08.
Rev. Two crossed poppy heads. Below, RECOGNITIS / DENUOQ. CONFIRMATUS / SANCITIS / ACADEMIAE MED. PAR. / STATUTIS / ATQUE IN STATUTA / COMMENTARIIS / J. I. GUILLOTIN PRAESIDE / 1809–1810 / Staff of Aesculapius transversely.
27 mm. Bronze. Milled. Thin.

856 GUYOY, Dr. Hendrik Daniel (1753–1828) Groningen, Holland. (Founder of Hospital for Deaf Mutes).
Ob. HIJ PLANTTE – NEERLAND KWEEKTE rosette HENRI DANIEL GUYOY. rosette Bust to left. On shoulder, VDK. F. (Vander Kellen).
Rev. In tied oak and ivy branches, surmounted by radiant sun, GOD GAF DEN WASDOM. / VIJFTIGJARIG / BESTAAN VAN HET / INSTITUUT / VOOR DOOFSTOMMEN / TO GRONINGEN / – / 1840
41 mm. Bronze.

935 HAHNEMANN, Dr. Samuel Christian Freidrich (1755–1843) Meissen, Saxonly.
Ob. SAMUEL – HAHNEMANN. Head to right in high relief. Below, EMILE ROGAT 1836
Rev. NE A MEISSEN LE 10 AVRIL 1755, VENU EN FRANCE LE 25 JUIN 1835. / A LEUR MAITRE, LES HOMOEOPATHISTES FRANCAIS . In re-entrant serpent, SIMILIA / SIMILIBUS / CURENTUR Ex. rosette
51 mm. Bronze.

960 HALLER, Dr. Albrecht von (1708–1777) Berne, Switzerland.
Ob. ALBERTUS . HALLERUS . Bust to right in peruke. Below, IM. MK. F (Johann Melchior Moerikofer)
Rev. PATRIAE NOVE SERTA PARAVIT. Upon a cloud an open book showing part of a skeleton and a plant, with lyre surmounted by radiant head, trumpet and wreath. Below, the Alps.
52 mm. Lead.

985 HARVEY, Dr. William (1578–1657) London, England.
Ob. HARVEY – GUILLELMUS Bust to right. On truncation ROGAT. F.
Rev. NATUS / FOLKSTONII / IN CANTIO / AN. M. D. LXXVIII. / OBIIT / LONDINI AN. M. DC. LVII. / – / SERIES NUMISMATICA / UNIVERSALIS VIRORUM ILLUSTRIUM / – / M. DCCC. XXIII. / DURANT EDIDIT.
40 mm. Bronze

1064 HELMHOLTZ, Dr. Hermann Ludwig Ferdinand von (1821–1894) Berlin, Germany
Ob. Bust to right. . HERMANN VON HELMHOLTZ. HEIDELBERG. MDCCCLVIII. MDCCCLXXI. Behind neck R.M.
Rev. DEN / TEILNEHMERN / AM 7. INTERNAT. / PHYSIOLOGENKONGRESS / ZU HEIDELBERG / GEWIDMET VON / GROSSHERZOG FRIEDRICH / VON BADEN / 1907
60 mm. Bronze.

975 HOSACK, Dr. David (1769–1835) New York, N. Y.
Ob. DAVID – HOSACK M.D. Head to right, the hair brushed upwards. Signed FURST F.
Rev. ARTS AND SCIENCE A short column with a multitude of emblems; lyre. spade, staff of Aesculapius, mounted sphere, bust, mallet, pallete with brushes, note book, square and compasses and paint tubes. Ex. FURST F.
34 mm. Bronze.

791 HOWARD, Dr. John (1720–1790) London, England.
Ob. JOHN HOWARD F.R.S. / HALF PENNY bust to left.
Rev. REMEMBER THE DEBTORS IN GOAL In beaded circle, a female facing to left, with olive branch on left arm, which is supported by a vase. With right hand she directs youth with key to prison. At her feet, three vases, one of which is overturned. Above, GO FORTH On edge PAYABLE IN LANCASTER LONDON OR BRISTOL
29 mm. Copper.

983 HUFELAND, Dr. Christoph Wilhelm (1762–1836) Berlin, Germany. Struck about 1833.
Ob. CHRIST. GVLL. – HVELAND Bust to right, with fur collar. Below, on arm BRANDT F.
Rev. A monument, upon upper shelf of which the staff of Aesculapius and a parchment upon which MACROBI / OTICE In front, a nude angel raises and gives drink to half-nude woman with two infants. Another nude angel extends the thread of life. Ex. NATURAE PRAECEPTA COLENS MORBISQVE MEDETVR / FILAQVE PARCARVM LENTIVS IRE DOGET / – D. XXIV. M. IVL. A. MDCCCXXXIII
41 mm. Bronze.

859 HUMBOLDT, Friedrich Heinrich Alexander von (1769–1859) Berlin, Germany.
Ob. ALEXANDER AB HVMBOLDT Head to right. On neck, BRANDT. F.

Rev. ILLUSTRANS TOTVM RADIIS SPLENDENTIBVS ORBEM Radiant chariot of the Sun over Zodiac, with river god and Abundance below. Ex. BEROLINI / MDCCCXXVIII
62 mm. Bronze.

860 Ob. In depressed oval, ALEXANDER V. HUMBOLDT Head to right. On neck, G. LOOS. DIR.
Rev. In depressed oval Science crowning seated Humboldt. Kneeling figure to left. To right, ancient lamp and laurel and kneeling winged figure. Below, coral and fish. Signed H. BUBERT FEC.
60 mm. Bronze.

968 HUNTER, Dr. John (1728–1793) London, England.
Ob. JOHANNES / HUNTER Head to right.
Rev. SCHOLA MEDICINAE LEODIENSIS Laurel wreath tied. Within wreath engraved, THOS. HANSON SMITH / FIRST IN / SURGERY / 1880–81 Ex. A.D. 1831 INS.
53 mm. Silver. Dies cut in 1834.

978 HUNTER, William (1718–1783) London, England.
Ob. GUIELMUS HUNTER MDCCXVIII. MDCCLXXXIII Bust to left. Below, N. MACPHAIL SC.
Rev. IN ACADEM. GLASGUENS. / FACULTATE MEDICA / DISCIPULUS / INGENTO AC LABORE / INSIGNIS / PROEMIUM HOCCE / MERITO CONSECTUS EST On edge: CAMPBELL S. MARSHALL, in CLASSE MATERIAE MEDICAE PRACTICAE 1891. Struck in 1810 and used by Glasgow Medical Faculty as a prize.
70 mm. Bronze.

863 JACQUIN, Baron Josef von (1766–1839) Vienna, Austria.
Ob. IOSEPH. FRANC. LIB. – BARO. DE. IACQVIN Head to left. Below, I.D. BOEHM. F
Rev. LARGA. RERVM. NATVRALIVM. COGNITIONE. CLARVS Man seated to left before a table holding a flower. On table, a retort and microscope. Ex. NAT. D.VII. FEBR. MDCCLXVI / MORT. D. IX. DEC. MDCCCXXXIX
52 mm. Bronze.

1050 JENNER, Dr. Edward (1749–1823) Berkley, England.
Ob. EDUARD JENNER ENDECKER DER SCHUTZIMPFUNG D. 14 MAI 1796 Bust to left. Ex. F. LOOS
Rev. TRIUMPH: GETINGET IST DES SCHEUSALS LANGE WUTH Hygeia with serpent on right arm, protects, by a shield bearing a cow, an infant against flying demon.
28 mm. Silver.

1051 JUSSIEU, Dr. Bernard de (1699–1777) Paris, France.
Ob. BERNARD – DE JUSSIEU. Bust to left. Below, DE PAULIS . F .
Rev. NE / A LYON / EN M. DC. XCIX . / MORT / EN M. DCC.LXXVII. / – /GALERIE METALLIQUE / DES GRANDS HOMMES FRANCAIS . / – / 1823
41 mm. Bronze.

864 KOCH, Dr. Robert (1843–1910) Berlin, Germany.
Ob. R: KOCH. MEDICUS. DOCTRINA. AC. MODESTIA. AEQUE. EXCELLENS Spectacled bust facing and to right.
Rev. A burning antique lamp. Beneath, TUBERCULOSIS . / ORIGINEM INDAGAVIT . / INVENT. SUSTULIT . / GOSSLERI . AUSPICIIS . / . AN NIS. / 1882–1890 Below, a transverse laurel branch. Signed, LAUER
50 mm. Bronze.

865 Ob. In beaded circle, PROFESSOR DR. ROBERT KOCH Decorated spectacled bust facing and to right. On breast, crossed laurels and staff of Aesculapius. At left, P. TUERPE SCULP. At right, A PULST CIS.
Rev. ZUR ERINNERUNG AN DIE ERFINDUNG DES TUBERCULIN / ANNO – 1890. Hygeia laureated, enthroned. At right of throne a drinking serpent. At left a laurel branch. In front Koch holds hand of kneeling female and points her to Hygeia. Child also kneeling. At left, three persons with sick child. At right, bookcases and two physicians. Ex. Dragon with neck transfixed with spear. Signed, OERTEL BERLIN DIR. R DREITENBACK FEC. 17 stars in periphery.
60 mm. Bronze.

866 Ob. Rosette PROFESSOR DR. ROBERT KOCH rosette. In beaded circle, bust half to right. Below, a large laurel branch with stem to right, tied with long ribbon.
Rev. UT SEMENTEM FECERIS ITA METES three rosettes. In cabled circle an open book supporting a skull. Below, a diploma with seals. Behind, a laurel branch and the staff of Aesculapius surmounted by patera and drinking serpent. Signed W. M(ayer).
49 mm. Bronze.

867 Ob. GEHEIMRATH. PTOF. DR. ROBERT KOCH Bust facing and to the right.
Rev. DEM GROSSEN FORSCHER In crossed

laures the staff of Aesculapius, upright. Ex. 1890.
27 mm. Nickel. Ring in top.

1038 LABBE, Dr. Leon (1832–1916) Paris, France.
Ob. Bust to right. Above, at left, SES ELEVES / SES AMIS Ex. DOCTEUR LEON LABBE / MEMBRE DE L'INSTITUT. SENATEUR Signed to left perpendicularly, A. PATEY
Rev. Labbe at left with two assistants removing a silver fork from a patient's stomach. At left, a washstand, at right, a stool. Ex. VIR AUDAX ET VOLUNTATE FORTIS
70 x 55 mm. Silvered.

1037 LAENNEC, R. T. H. (1781–1826) Struck in 1926 to commemorate the centenary of his death.
Ob. Bust facing. To left, R.T.H. LAENNEC / 1781–1826 To right, George Hayes / 1926
Rev. In tied oak and laurel branches, CENTENNAIRE / DE / LAENNEC / 1826–1926
50 mm. Bronze.

980 L'EPEE, Rev. Charles Michael (1712–1789) Versailles, France. Founder of Deaf-Mute Asylum at Frankfort.
Ob. MORT A PARIS 1789. Bust to left. On shoulder, B. DUVIVIERE F.
Rev. OFFERT / AU SOUV. PONT. / PIE VII / PAR LES ADMINISTRATEURS / DE L'INSTITUTION / DES SOURDS – MUETS / LORS DE LAVISITE / DE SA SAINTETÉ / PARIS 23 FEVIER / 1805
42 mm. Bronze.

1049 Ob. MICHEL DE L'EPPE NE A VERSAILLES 1712. MORT A PARIS 1789. Bust to left. On shoulder, B. DUVIVIER F.
Rev. OFFERT / AV SOUV. PONT. / PIE VII / PAR LES ADMINISTRATEURS / DE L'INSTITUTION / DES SOURDS – MUETS / LORS DE LA VISITE / DE SA SAINTETE / PARIS 23 FEVIER / 1805
42 mm. Bronze.

869 LIEBIG, Dr. Justus von (1803–1873) Munich, Bavaria.
Ob. JUSTUS L. B. DE LIEBIG MEDIC. ET PHILOS. D. A. Chem. P.P.O. MONACHEVSIS rosette Head to left. Below, C.G.K.
Rev. INTIMAM RERUM APERUIT VIM HOMINIBUSQUE THESAUROS / Beneath, branches of oak and laurel entwining chemical apparatus. Science, irradiated, with large book in lap, dropping fruit, grain into laps of two kneeling females. Below her a youth holding retort. Between his feet, a skull. Ex. KORN IN MAINZ
52 mm. Bronze.

959 LOCHNER, Dr. Johann Heinrich, (1800–1865) Zurich, Switzerland.
Ob. Bust to right. Below, F. ABERLI
Rev. MED. DOCT. / HEINRICH LOCHNER / PROF. DER CHIRURGIE / IN ZÜRICH / 1833–1860 / DEM TREUEN LEHRER / DANKBARE SCHÜLER / MAY 1860.
44 mm. Bronze.

986 LOCKE, John M. B. (1632–1704) Oxford, England.
Ob. IOHANNES—LOCKE Bust facing with head to right.
Rev. Liberty with cornucopia by her side and holding hat, and Reason with scales and books, seated on sarcophagus. At their feet a child with book, surrounded by toys. Ex. M. 1704. At side, J.D.
45 mm. Silver

939 MCKENZIE, Dr. Robert Tait (1867–1939) Philadelphia, Pa.
Ob. R. TAIT. MCKENZIE – SCULPTOR Head to left. Below, on ribbon JOHN. R. SINNOCK / FROM HIS FRIEND
Rev. Blank.
67 mm. Bronze.

788 MAJENDIE, Dr. Francois (1783–1855) Paris, France.
Ob. Bust to right. Behind, perpendicularly, Magendie (in script) Below, David 1838
Rev. Blank.
165 mm. Bronzed stone copy.

981 MALPIGHI, Dr. Marcello (1628–1694) Rome, Italy. Struck the year before his death.
Ob. MARCELLVS . MALPIGHIVS . BONON. PHIL. ET. MED. COLLEG. Bust to left. Below, S.V. Beaded periphery.
Rev. TVTISSIMO. LVMINE . EXHIBITO Beaded periphery. Large cube upon face of which, STAT. SOLIDO with an upright serpent to left, and a bee in the upper right hand corner. Upon it reclines a female with left leg flexed and left arm resting on books, examining plants with microscope. Ex. MDCXCIII
35 mm. Bronze. Obverse gilded.

984 MEAD, Dr. Richard (1673–1754) London, England. Made about 1830.
Ob. RICHARD MEAD M.D. Behind and perpendicularly. Togated bust to right. Below, L. C. WYON SC.
Rev. MERER, MEDENDO Hygeia standing partly facing left, with serpent, dish, vase of flowers and antique stand and lamp. Ex. ST. THOMAS'S / HOSPITAL /
75 mm. Frosted silver encased in thin glass. Weight 7 ounces.

1048 MITCHELL, Dr. S. Weir (1829–1914) This is not

a medal, but a large plaque done by Otto Schweizer.

The series of these panels begins with that of the poet physician, S. Weir Mitchell of Philadelphia. It is the earliest of the group (1907), but none-the-less one of the most impressive of all. The well-shaped head with meditative dignity is shown in profile. Eyes, nose and especially the ear, are extremely well done. The two figures in the lower right, Aesculapius attending a fainting girl, and those in the upper left, two Muses with scroll and lyre, of classical cut and attire, are self explanatory. The couple in the lower left, marching hand in hand under the rainbow of life, indicates health and moral beauty.

870 MORGAGNI, Dr. Giovanni Battista (1682–1771) Padua, Italy.

Ob. IOANN. BAPTIISTA. MOTGAGNI. Bust to right with cloak, bands and flowing hair. Below, T. MERCANDETTI. F. R(onae)

Rev. SALVTI – SCIENTIA. A curtained bed on which is a cadaver with hanging left arm and opened thorax. At left, a winged nude youth with staff of Aesculapius in left hand and right out stretched for a scalpel held by Minerva, to left, who wears a helmet with owl and has Medusa's head on breast, and holds wreath in left hand. Ex. T. M. INV. ET. SCVLP. ROMAE /. MDCCCCVIII. 68 mm. Bronze.

871 Ob. I. B. MORGAHNVS ANATOMICVS AET, XC. Bust to right. Below, LVCKNER.

Rev. PROXIMOS OCCVPAVIT HONORES* Aesculapius, with staff erect. At right, Telesphorus. At left, two books supporting a bust on which is perched an owl. Ex. CIC (reversed) IC (reversed CCLXXI / F. B(alunani). F

50 mm. Bronze.

969 NETTLESHIP, Dr. Edward (1845–1913) London, England.

Ob. Head to left. In front, AETATIS / SUAE LVIII Behind, 1903. Below neck, F. B(owcher)

Rev. TO / COMMEMORATE / EDWARD / NETTLESHIP'S / WORK AND TO / ENCOURAGE / RESEARCH IN / OPHTHALMOLOGY Below, a spray of laurel. 53 mm. Bronze.

872 NEWTON, Sir Isaac (1642–1727) London, England. Made many discoveries in optics.

Ob. ISAACUS – NEVVTONIUS. Bust to left. Signed, PETIT. F.

Rev. NATUS / VOLSTROPII / IN ANGLIA / AN.M.DC. XLII. / OBIIT / AN.M.DCC. XXVII. / – / SERIES NUMISMATICA / UNIVERSALIS VIRORUM ILLUSTRIUM . / – / M.DCCC.XIX. Below, DURAND EDIDIT

37 mm. Bronze.

875 OKEN, Dr. Lorenz (1779–1861) Jena, Germany. (Professor of Physiology)

Ob. LAVRENTIVS OKEN ORTENAVIENSIS / NAT. D. II M. AVG. MDCCLXXIX Head to right. Below, LOOS D. / KOENIG F.

Rev. ORDINES CORPORVM ORGANIS AEQVAVIT / SCRVTATORES NATVRAE CONSOCIAVIT Isis, Osiris and Hippocrates in boat, two of them seated and the third on lotus flower between them. 41 m. Bronze.

873 OLBERS, Dr. Heinrich Wilhelm Mathias (1758–1840) Bremen, Germany.

Ob. HEINR. WILH. OLBERS GEB. D II OCT. 1758 DOCTOR DER HEILKUNDE D. 28 DEC. 1780 rosette Bust to left. Below, G. LOOS DIR. / C. PFEUFFER FEC.

Rev. In circle of stars, DEM / ENTDECKER / DER / PALLAS U. DER VESTA / DEM ERFORSCHER / DER KOMETENBAHN / IHREM / HOCHVEREHRTEN / DIRECTIONS MITGLIEDE / AM IUBELTAGE IN BREMEN / D. 28 DEC. 1830.

50 mm. Silver.

874 ORFILA, Dr. Matthieu Joseph Bonaventure (1787–1855) Paris, France.

Ob. M.J.B. ORFILA PRESIDENT FONDATEUR ET BIEN FAITEUR Head to left. Below, E. FARACHON F.

Rev. ASSOCIATION DES MEDECINS DE LA SEINE FONDEE EN 1833 / DECRETEE D'UTILITE PUBLIQUE EN 1851. In field, "JES METS / AU PREMIER RANG / DES CHOSES UTILES / QU'IL M'A ETE DONNE / DE FAIRE, LA FONDATION / DE L'ASSOCIATION. . . . Ex. A star. On edge mint mark and CUIVRE, incused.

50 mm. Bronze.

940 PANCOAST, Dr. Joseph (1805–1882) Philadelphia, Pa.

Ob. Head to left in high relief. Behind, PANCOAST Signed, W. BARBER. F.

Rev. In tied laurel and oak branches, JOSEPH / PANCOAST. M.D. / PROF. OF ANATOMY / JEFFERSON MEDICAL / COLLEGE, / Born 1805.

78 mm. Bronze.

876 PARKES, Dr. Edmund Alexander (1819–1876) Netley, England.

Ob. EDMUND ALEXANDER PARKES Ex. B. 1819 – D. 1876 Head to left. Below, J. S. & A. B. WYON

Rev. ARMY MEDICAL SCHOOL / HYGIENE. In tied laurels, PARKES / MEMORIAL / MEDAL

53 mm. Bronze.

806 PASTEUR, Dr. Louis (1822–1895) Paris, France.

Ob. Bust to right. At sides, 1822–1895. Below, V. PETER

Rev. Patera entwined by serpent before globe illuminated by the sun. Behind the vase a laurel branch. Signed, V. PETER. VERITATEM VMBRIS INVOLVTAM EVOLVIT (Struck in 1906)

68 mm. Bronze.

941 Ob. LS. PASTEUR – MBRE. DE L'INSTITUT. Bust to right. Below, A. BORREL

Rev. SOCIETE D'AGRICULTURE DE MELUN / rosette BON DE LA ROCHETTE, PT. E. REDMOND. H. GARNOT. VE. PTS. BANCEL. BLAVOT. SEC. C. BAULANT. TRES. rosette. In circle, 5 ET 17 MAI / 2 JUIN 1881 / L'INOCULATION PREVENTIVE / DES VIRUS CHARBONNEAUX / A ETE PRATIQUEE AVEC SUCCES / PAR / MR. PASTEUR / ASSISTE / DE M. M. CHAMBERLAND ET ROUX / AVEC LE CONCOURS / DE MR. ROSSIGNOL / – / POUILLY LE FORT / –

50 mm. Silver

963 Ob. LOVIS – PASTEVR. Bust to left in cap and cape. Behind neck incused, O. Roty

971 Rev. Olive branch to left. INSTITVT / PASTEVR / M / DCCC / XXXVIII

39 mm. Bronze.

1031 PASTEUR, Dr. Louis (1822–1895) Paris, France.

Ob. Bust to left wreathed below with laurel branches. Above, at left, LOVIS / PASTEVR. At right, perpendicularly, 1822–1895. Ex. At right, OFERT—PAR / L. HEMOGLOBINE / DESCHIENS. Signed, incused, V. S. Canale.

Rev. Rose branch tied with ribbon. Above, FERMENTATIONS / GENERATIONS DITES SPONTANTEES / VINS, BIERES, VERS A SOIE / MALADIES VIRVLENTES / VIRVS, VACCINS / PROPHYLAXIE DE RAGE. At right, perpendicularly, FRAPPE PAR A . LIEVRE. PARIS & SENS (incused)

80 x 110 mm. Lead.

1056 PAUTRIER, Lucien Marie (French physician)

Ob. Bust to left. .LVCIEN. MARIE. – . PATVRTRIER.

Rev. A group of buildings. To right, in small circle, PE. Above, .STRASBOVRG. / MCM / XVIIII – MCM / XXXIX

72 mm. Bronze.

877 PFAFF, Dr. Christoph Heinrich (1772–1852) Stuttgard, Germany.

Ob. C. H. PFAFF DOCT. D. MEDICIN AM 5. OCTOB. 1793 / rosette ZUM 5 OCTOB. 1843 rosette. Head to left. On neck, LOOS D. / H. LORENZ F.

Rev. LUMEN SPARGENDO CONSUMOR (incused). Chemist in laboratory—shield below. Signed, H. L.

48 mm. Bronze.

1032 PINARD, Adolph (1844–1934) France.

Ob. Bust to left. Below, hospital under which is GROVPE D'ASSISTANCE / MERY – 5 – SEINE. Above head, PINARD. To left, perpendicularly, ADOLPHE. To right, perpendicularly, PVERICVLTVR. Signed, Laucolot / Crocc

Rev. Mother and infant. Above, dwellings and XXANS / DE PROFESSORAT / A LA MAISON / BAVDELOCOVE. Below, LE LAIT DE LA MERE / APPARTIENTA L'ENFANT. To left LC. On lower edge SARGENT

60 x 40 Silver.

982 POLITZER, Dr. Adam (1833–1920) Vienna, Austria.

Ob. In depressed field, bust to right. Behind neck, TELCO. Ex. ADAMO POLITZER / PROFESSOR CLARISSIMO / AURIUM SCIENTIAE PER IX / LUSTRA IN UNIV. VENDOB . / DOCTORI / DISCPVLI GRATISSIMI / MCMVII

42 x 68 mm. Bronze.

878 POTER, Dr. Guy (1619–) Paris, France.

Ob. CVIDO. POTERIVS. REGVM. FRANC. E. POLON. CONS. E. MED. Bust to right in skull cap. Ex. *ROMAE.MDCLXV*. Date not clear. Medal damaged on edge.

Rev. In circle made by serpent re-entrant, a torch and staff tied. Below, on ribbon, A NVMINE VIRTVS

40 mm. Bronze.

879 RASORI, Dr. Giovanni (1766–1837) Milan, Italy.

Ob. GIOVANNI RASORI NATO A PARMA 1766. MORTO A MILANO 1837. Head to right. Below, E. GALLI F.

Rev. AL. RIFORMATORE DELLA MEDICINA GLI AMMIRATORI. In tied oak wreath, the staff of Aesculapius, upright.

45 mm. Bronze.

886 REGEMANN, Dr. Johan Ludwig (1711–1762) Warsaw, Poland.

Ob. IOAN: LUD: REGEMANN. BOERHAAVII. DISCIP:N: BREMAE. MDCCXI.

Bust to right. Below, I. P. HOEZHAEVSSER. F.

Rev. In tied oak branches, VIRO / MEDICAE ARTIS STUDIO . / FELICI . / ABSQUE LUCRI QUAESTU. / XXXV. ABHINC ANNIS DE GENTE / POLONA CONTINUO BENE MERENTI / EXIMIA MORUM PROBITATE / INSIGNI. / HOC GRATI ANIMI MONUMENTUM / POST CURATUM AN EODEM / VULNUS FERRO PARRICIDAE / DIE III. NOVEM. MDCCLXXI. / SIBI ILLATUM. / STAN: AUG: REX / DEDIT.

59 mm. Bronze.

965 ROENTGEN, Wilhelm Conrad (1845–1923) Wurzburg, Germany.

Ob. In depressed circle, head facing left. Behind neck, 1845–1925. Around periphery . WILHELM . KONRAD . RONTGEN . / DISCOVERED . X. RAYS. 1895

Rev. Upper platform surmounted by depressed circle, around periphery of which, THE AMERICAN ROENTGEN RAY SOCIETY. In depressed circle, rays on which X and above, eagle with spread wings. Below, olive branches. Ex. AWARD FOR EXHIBIT ON / "THE SMALL INTESTINES" / TO UNIVERSITY OF PENNSYLVANIA MEDICAL SCHOOL / AND HOSPITAL DEPARTMENTS OF ROENTGENOLOGY / OF SURGICAL RESEARCH AND OF / BIOLOGICAL CHEMISTRY AND THE / GASTRO-INTESTINAL CLINIC / SEPTEMBER 26, 1935

65 mm. Gold.

884 ROKITANSKY, Baron Karl von (1804–1878). Vienna, Austria.

Ob. CARLOVS. ROKITANSKY. NAT. GRADECII. REGINAE . XVIIII. FEBRVARIO . A. MDCCCIIII. MORT. VINDOBONAE. XXIII. IVL. A. MDCCCLXXVIII * Head to left. Below, JAUNER

Rev. In crossed tied laurels, IMMORTALI / . PATRI. / GRATA. EIVS / PROGENIES

70 mm. Bronze.

885 RUDOLPH, Dr. Carl Asmund (1771–1832) Berlin, Germany.

Ob. C. ASMVND. RVDOLPHI M. DR. ET PROF. BEROL. R. BOR. A CONS. SECR. REI. MED. ORD. AQ. RVBE. EG. rosette / NAT. HOLMIAE – D. 14 IVL. 1771. Head to left. On neck, KOENIG FEC. Below, LOOS DIR.

Rev. QVI / OCCVLTA / NATVR. ANIMANTIVM / INDEFESSO STVDIO / SCRVTATVS / DOCTRINAE COPIA / PLVRIMIS PROFVIT / DECESS. BERTOL / D. 29 NOV. / 1832. Above, a butterfly with 5 stars on each side. Below, a skull with flowering branch in each orbit.

42 mm. Bronze.

880 RUSH, Dr. Benjamin (1745–1813). Philadelphia, Pa.

Ob. BENJAMIN RUSH M:D: OF PHILADELPHIA. . . . Bust to left.

Rev. An altar upon which rests an open book. Above, SYDENHAM. In front upon an oval panel, bust of Aesculapius with staff. In panel at right, an urn. Ex. A. MDCCCVIII. Signed, M. FURST FEC.

42 mm. Bronze.

1057 SABOURAUD, Raimond Jacques (1864–1936). French Dermatologist.

Ob. Bust facing left.. RAIMOND . JACQVES . – . SABVRAVD .

Rev. Hospital shown. Above, . HOPITAL . SAINT ⊽ LOVIS. Ex. 1889–1929

60 mm. Bronze mounted in wood.

891 SACCO, Dr. Luigi (1769–1838). Milan Italy.

Ob. ALOYSIUS . SACCO . MEDIOL. MED. ET. CHIR. PROF. Nude bust to left. Below, P. T(ADOLINI). F.

Rev. In oak branches tied by serpent, IENNERI. AEMULO . / AMICI. BONONIENSES . / A. I. AB. ITAL. REP. CONS.

55 mm. Bronze.

1047 SALK, Dr. Jonas E. Pittsburgh, Pa. U.S.A.

Ob. DR. JONAS – E. SALK. Head (with glasses) to left. On shoulder, G. Roberts 1955

Rev. Female figure standing with boy and girl at left side, holding a shield with caduceus in right hand. Periphery, AWARD OF CONGRESS TO DOCTOR JONAS E / SALK. In field, IN RECOGNITION – AND APPRECIATION / OF HIS / ACHIEVEMENT IN DEVELOPING / A VACCINE – FOR POLIO

42 mm. Bronze.

892 SCHEELE, Carl Wilhelm (1742–1786). Stralsund, Sweden. (Pharmacist)

Ob. CARLOUS WILH. SCHEELE CHEMICUS. Head to right. Below, X. G. WIKMAN

Rev. INGENIO STAT SINE MORT DECUS. Spherical vessel radiant. At sides, chemical apparatus. Ex. SOCIO PRAEMATURA / MORT EREPTO / R. AD. SC. ST

35 mm. Bronze.

945 SCHOENLEIN, Dr. Johann Luk (1793–1864). Zurich, Switzerland.

Ob. JOANNES LVCAS – SCHOENLEIN. Head to left. Below, A. BOVY. F.

Rev. JO. LVCAE / SCHOENLEIN / MEDICO / IN MEMORIAM / VIRTV-

TIS / ATQUE HONORIS / CIVES / TVRICENSES / MDCCCXXXIXI / –
40 mm. Bronze.

1068 SCHWEITZER, Albert (1875–). Alsatian philosopher—theologian—musician who went to Africa in 1913 as a medical missionary.
Ob. Raised head to left. Left of head ALBERT / SCHWEITZER. Signed G. C. REVOL.
Rev. Male figure and bars of music.
This is a replica of the medal struck on his election to the National Academy of France, 1950
70 mm. Bronze.

890 SEUTIN, Baron Dr. Louis Joseph (1793–1862). Brussels, Belgium.
Ob. LOUIS JOSEPH SEUTIN – NE A NIVELLES LE 18 OCT: Head to left. Below, LEOPOLD WIENER
Rev. Tied laurels. At juncture a patera and drinking serpent. Below, A L'AUTEUR / DE LAS METHODE / AMOVO-INAMOVIBLE, / LA MEDECENE / ET L'HUMANITE / 1852
62 mm. Bronze.

888 SIEBOLD, Dr. Philipp Franz von (1796–1866). Munich, Bavaria. Physician to Dutch Embassy in Japan.
Ob. PHILIPP FRANZ VON SIEBOLD / rosette ERFORSCHER JAPANS rosette. Decorated bust partly to right. Above, GEB. Z. WURZBURG 17. FEB. 1796 – GEST. Z. MUNCHEN 18. AUG. 1866. On robe, SCHWERDTNER
Rev. ZUR ERINNERUNG AN DIE 100 JÄHRIGE GEBURTSTAGFEIER. Ex. rosette 1896 rosette. In field sun rising from ocean. On sun are Japanese characters.
50 mm. Silver.

944 SKODA, Dr. Josef (1805–1881). Vienna, Austria.
Ob. *SCHOLAE. MEDICAE . REFORMATORI. MEMBRO. PRAELUCENTI. COLLEG: DOCT: MEDICUM. UNIV. VINDOB: 1871 * In circle, head to left. Above JOSEPHO SKODA. Signed, C. Radnitsky
Rev. PERCUSSIONE. ET AUSCULATATIONE. NATURAM. MORBI. DIVINAT. Aesculapius to left with stethoscope in left hand, sitting at bedside and pointing to patient's chest with right hand. Ex. ***
70 mm. Bronze.

889 STIEGLITZ, Dr. Johann (1767–1840). Hanover, Germany.
Ob. JO. STIEGLITZ EQ. ARCHIAT. HANNOV. NAT. AROLSEN D. 10 MART 1767. DOCT. PROMOT. GOETTING D 25 APR. 1789. / MEDICI HANNOVERANI D.D. Head to left. On neck, BRANDT F.
Rev. A temple above door, PROCUL ESTE PROFANI. Between pillars on right are wreaths upon which, WERLHOF – ZIMERMAN – WICHMAN – LENTIN. In front, Aesculapius with staff hanging wreath between pillars on left, within which, STIEGLITZ. Ex. XXV April / MDCCCXXXIX
47 mm. Bronze.

887 STUKELEY, Dr. William (1681–1765). London, England.
Ob. REC. GVL. STVKELEY . M. D. SR & AS (Fellow Royal and Antiquarian Societies). Head with ivy wreath to right. Ex. AET. 54
Rev. View of Stonehenge. Ex. OB. MAR. 4. 1765 / AE: 84
88 mm. Bronze.

893 TAIT, Dr. Robert Lawson (1845–1899). Birmingham, England.
Ob. Bust, half to right in depressed circle.
Rev. Armorial shield with owl on top. Below, on ribbon, CITO AC CERTE. Below, THIS MEDAL OF / LAWSON TAIT / WAS ENGRAVED / FROM THE LIFE / BY HIS FRIEND / JOSEPH MOORE / 1890 / –
50 mm. Bronze.

894 TIEDMANN, Dr. Friedrich (1781–1861). Heidelberg, Germany.
Ob. FRIDERICVS – TIEDMANN / NAT. D. XXIII AVG. MDCCLXXXI. Head to right. Below, C. Voigt
Rev. VIRO DE AVGENDA NATVRAE SCIENTIA PER X LVSTRA EGREGIE MERITO SODALES rosette. A star fish. Below, FRANCOF. A. M. / D.X. MART. MDCCCLIV
45 mm. Bronze.

895 VESALIUS, Dr. Andre (1514–1564). Brussels, Belgium and Paris, France.
Ob. ANDREAS – VESALIUS. Head to right. Below, LEFEVRE
Rev. NATUS BRUXELLIS / IMBELGICA / AN. M.D.XIV . / ORBIIT / AN. M. D.LXIV / – / SERIES NUMISMATICA / UNIVERSALIS VIRORUM ILLUSTRIUM / – / M.DCCC.XX. / DURAND EDIDIT
40 mm. Bronze.

987 Ob. VESALE NE EN 1514 MORT EN 1564. Bust to left. Below, Jouvenal
Rev. IL FUR / LE PÈRE DE / L'ANATOMIE . 1537, APRÈS / AVOIR TUDEÉ ET AVOIR / OBTENU LES PLUS BEAUX / SUCCÈS A MONTPELLIER, / À PARIS, À LOUVAIN, À PADOUE / ET À

VENISE, IL PROFESSA / L'ANATOMIE ET LA CHIRURGIE / À L'UNIVERSITÈ DE PADOUE, / IL Y COMPOSA SON MAGNIFIQUE / OUVRAGE SUR L'ANATOMIE DU / CORPS HUMAIN. AYANT QUITTÈ / LA COUR DE MADRID Où IL / NE SE PLAISAIT POINT IL / MOURUT À ZANTE OÙ / LES VENTS CONTRAIRES / L'AVAIENT / JETÉ. (Beaded periphery.)
35 mm. Bronze.

947 VIRCHOW, Dr. Rudolph Ludwig Karl (1821–1902). Berlin, Germany.
Ob. Bust to right. Below, M & W / ST. Below on lapel, ..GEH. MED. RATH. Professor .. / .. Dr. Rudolph.. Virchow..
Rev. Blank.
60 x 40 mm. Bronze.

787 WEIGERT, Dr. Karl (1845–1904). Germany.
Ob. Bust facing. BElow, KARL WEIGERT
Rev. Blank.
75 x 125 mm. Copy in stone.

897 WILLIS, Dr. Francis (1717—1807). London, England.

898 Ob. DOCTOR – WILLIS, Bust to left, three-quartered facing. Below, C. I.
Rev. BRITONS / REJOICE / YOUR KING'S / RESTORED. / 1789
32 mm. Bronze.

MEDALS OF AWARD

1059 AMERICAN GASTRO-ENTEROLOGICAL ASSOCIATION MEDAL
Ob. . JULIUS . FRIEDENWALD . MEDAL . / AMERICAN . GASTRO . ENTEROLOGICAL. ASSOCIATION. Bust in depressed circle, facing. To right, William Beaumont
Rev. Tied laurel branches within which, 1957 AWARDED / FOR / OUTSTANDING / ACHIEVEMENT / IN GASTRO-ENTEROLOGY / TO T. GRIER MILLER / AB., MD., LLD. Ex. Tiffany and Co.
55 mm. Bronze.

976 BOK AWARD, Philadelphia, Pa.
Gold medal in gold and ivory casket. Casket designed by Violet Oakley. Presented to Dr. Chevalier Jackson for his achievements in the removal of foreign bodies from the air and food passages.

1046 ELLIOTT CRESSON MEDAL awarded Dr. Joseph Zentmayer 1875
Ob. Head facing right. Above ELLIOTT CRESSON MEDAL. Below FOUNDED 1848
Rev. Around periphery, AWARDED BY THE FRANKLIN INSTITUTE OF THE STATE OF PENNSYLVANIA. In laurel wreath TO / JOSEPH ZENTMAYER / 1875
36 mm. Gold.

1045 FRANKLIN INSTITUTE MEDAL awarded to Dr. Joseph Zentmayer 1874
Ob. Bust of Benjamin Franklin facing left. Around, FRANKLIN INSTITUTE OF THE STATE OF PENNSYLVANIA 1824
Rev. Around periphery REWARD OF SKILL AND INGENUITY. Within laurel and palm branches, Ro / Joseph Zentmayer / Philada., Pa. / for / Microscopes & Objectives / 1874
50 mm. Silver.

1061 LESLIE DANA MEDAL for the prevention of blindness.
Ob. LET / THE LIGHT / REMAIN. Woman seated to left facing right with infant in lap, to which she shows the sun at horizon. Under sun resting on the water an upright caduceus
Rev. LESLIE DANA MEDAL FOR PREVENTION OF BLINDNESS TO / WILLIAM ZENTMAYER / M.D. / HUMANITORUM / STUDIOSUS / HOMINIS VISUM / CONSERVAT / 1945
40 mm. Bronze hung on a red and blue ribbon.

1062 LUCIEN HOWE MEDAL OF THE AMERICAN OPHTHALMOLOGICAL SOCIETY
Ob. Wreath of green leaves beneath Maltese cross of red enamel with round gold button on top with light blue enamel edge. In center of button THE / LUCIEN / HOWE / MEDAL. On light blue edge AMERICAL OPHTHALMOLOGIVAL SOCIETY.
Rev. AWARDED TO / WILLIAM ZENTMAYER / IN RECOGNITION OF HIS / DISTINGUISHED SERVICE / TO / OPHTHALMOLOGY / MAY 17 / 1948

1044 PARIS INTERNATIONAL EXPOSITION MEDAL awarded to Joseph Zentmayer for his work on microscopes 1878.
Ob. Laureated head facing left. Above, star. To left REPUBLIQUE, to right, FRANCAISE. Below J. C. CHAPLAIN
Rev. Around periphery, EXPOSITION UNIVERSELLE INTERNATIONALE DE 1878. Figure with trumpet and laurel wreath flying over exposition. Beside, winged child carrying plate on which J. ZENTMAYER. Below PARIS
68 mm. Silver

1067 PHILADELPHIA BUSINESS CLUB PLAQUE awarded to Dr. Joseph W. Post.
This is a large wooden plaque in shape of a shield. On it is a silver shield approximately 8½″ by 7″. At top is a seal surrounded by a wreath in yellow metal and below the caduceus.

It is inscribed: TO / JOSEPH W. POST, M.D. / RENOWNED PIONEER RADIOLOGIST / SELECTED IN A NATIONAL POLL / "NATIONAL PHYSICIAN OF THE YEAR" / PRESENTED BY THE / PHILADELPHIA BUSINESS CLUB / BY HIS UNSELFISH DEVOTION TO HIS PATIENTS, HIS / INNUMERABLE CHARITIES AND BENEFACTIONS IN THE / PURSUIT OF HIS PROFESSION, HIS COUNTRY IS RICHER, / IN HIS QUIET DIGNITY, HIS HIGH IDEALS OF HUMANITY, / HE HAS INDEED BEEN THE EMBODIMENT OF / HIPPOCRATIC VIRTUE. / 1958

1060 PHILADELPHIA PEDIATRIC SOCIETY MEDAL

Ob. Bambino in center. THE PHILADELPHIA PEDIATRIC SOCIETY. Ex. Founded 1896

Rev. Within tied laurel wreath, PRESENTED TO / HOWARD CHILDS CARPENTER M.D. / FOR / NOTABLE SERVICE AND ACHIEVEMENT / IN THE FIELD / OF / CHILD HEALTH / May 18, 1933. On edge "And still to childhood's sweet appeal the heart of genius turns."

59 mm. Bronze.

1041 UNITED STATES CENTENNIAL COMMISSION MEDAL awarded Joseph Zentmayer for his work in microscopes in 1876.

Ob. Figure facing left extending branch over various objects. In background a building. Figures above, below to right and to left of seated figure. Around periphery, stars.

Rev. INTERNATIONAL EXHIBITION PHILADELPHIA MDCCCLXXVI. Within laurel wreath, AWARDED BY / UNITED STATES / CENTENNIAL / COMMISSION

76 mm. Bronze.

BRITISH WAR MEDALS

These medals were issued to Medical Officers and enlisted men of the R.A.M.C. The original campaign ribbons are attached. They were not given for medical achievements but represent AWARDS for medical services. The name of the recipient is engraved on the edge of each medal.

813 ABYSSINIA 1867

Ob. Head of Queen facing left in beaded circle. Around this ABYSSINIA with the point of a star between each letter. Leaf design in each point.

Rev. Tied laurel wreath. In field in beaded circle 58 / Cr. SERGT. / W. JOSEPH / A. H. CORPS

A crown attached to edge of medal. Issued to members of the Expeditionary Forces sent into Ethiopia in 1867. Medals of this type are somewhat unique in that each recipient's name in raised letters is found on the reverse side, necessitating a change of die for each striking.

Campaign ribbon: Red with white edge.

32 mm. mm. Silver.

803 AFGHANISTAN 1878–79–80

Ob. VICTORIA – REGINA – ET IMPERATRIX. Crowned bust of Victoria to left.

Rev. AFGHANISTAN. Below in field on elephant carrying rider and cannon followed by mounted soldiers. In background, hills and foot soldiers. Below, 1878–79–80

Recipient: SUR. MAJ. E. O'SULLIVAN. A.M.D.

Campaign ribbon: Red and green. Two silver bars, KABUL / CHARASIA

36 mm. Silver.

804 ARMY OF INDIA 1799–1826

Ob. VICTORIA – REGINA. Crowned head to left. Signed H. WYON.

Rev. TO—THE ARMY OF INDIA. In field, winged Victory seated with wreath in left hand and olive branch in right hand. Date palm and arms in background.

Recipient: ASST. SURGN. H. BOUSFIELD. FIELD HOSPL.

Campaign ribbon: Light blue. One silver bar AVA. This medal is very rare.

36 mm. Silver.

811 ASHANTI 1900

Ob. Bust to left. EDWARDVS VII REX – IMPERATOR

Rev. Lion standing facing left, rising sun beyond. In foreground shield and spears. Below, ASHANTI

Recipient: Dr. J. C. Castor A.F.A. (African Field Force) This is rather rare as very few Caucasians were in the force.

Campaign ribbon: Green and black.

36 mm. Silver.

996 BADGE OF THE GRAND COMMANDER OF THE VICTORIAN ORDER

Eight pointed white enamel star with oval decoration in center, topped with crown with red and green jewels. Periphery of oval blue enamel with VICTORIA. Red center with VR in gold. This is attached to the red, white and blue sash (998), when worn.

Recipient: SIR FREDERICK TREVES

994 BADGE OF THE ORDER OF ST. JOHN

Eight pointed star with lion and unicorn of brass alternating between each two points of white enamel star.

Recipient: SIR FREDERICK TREVES

995 BREAST DECORATION (PIN) OF THE ORDER OF ST. JOHN

Eight pointed star of white enamel with lion and unicorn alternating between each two points of star.
Recipient: SIR FREDERICK TREVES

812 BRITISH MILITARY MEDAL FOR BRAVERY, DATE UNKNOWN
Ob. Bust of George V facing left. GEORGIVS V BRITT. – IN REX ET IND. IMP.
Rev. Around periphery tied laurel wreath. In field, above, a crown, below which, is GVR (monogram) / FOR / BRAVERY / IN THE / FIELD
Recipient: 43570 PTE. T. WALTERS. R.A.M.C. Campaign ribbon: Red white and blue stripes.
35 mm. Silver.

822 BRITISH WAR MEDALS (FIVE) ON A SINGLE BAR AWARDED TO MAJ. M. B. KING, R.A.M.C. who also served in the Second World War and was killed in Italy.
MILITARY CROSS AND BAR. A crown at each point of cross with RG in center.
Campaign ribbon: Purple and white.
BRITISH WAR MEDAL 1914–1918
Ob.Head of George V. GEORGIVS BRITT: OMN: REX ET IND. IMP:
Rev. Horse and rider. Beneath, a shield and skull. Above 1914–1918
Campaign ribbon: Orange, white, black and blue.
38 mm. Silver.
VICTORY MEDAL
Ob. Figure of Victory
Rev. Laurel wreath. THE GREAT / . WAR FOR . / CIVILISATION / 1914–1919 /
Campaign ribbon: Multicolored with oak leaf.
INDIA GENERAL SERVICE 1921–24
Ob. Crowned bust of George V. GEORGIVS KAISA – I – HIND
Rev. Portrait of fort. Below INDIA beneath which tied oak and laurel.
Campaign ribbon: Black and green. One bar WAZIRISTAN 1921–24
GEORGE V. JUBILEE MEDAL 1935
Ob. Crowned bust of George V and Queen Mary. GEORGE. V. AND . QUEEN. MARY MAY. VI. MCMXXXV
Rev. Beaded edge. Center monogram GRI To left, May 6 / 1910 To right, May 6 / 1935 Crown above.
Campaign ribbon: Red, white and blue.

800 CHINA 1842
Ob. VICTORIA – REGINA Crowned head facing left. Signed, H. WYON
Rev. ARMIS EXPOSCERE PACEM. Group of arms; cannon, spears, anchor, swords, flags, drum, shield of arms, bugle, hat. Below, CHINA / 1842
Recipient: G. J. MARTYR MADRAS ARTILY, ASSISTANT SURGEON
Campaign ribbon: Red with gold edge.
36 mm. Silver.

999 CIVIL DECORATION. COMMANDER OF THE BATH
Oval decoration in yellow metal. In center three crowns with thistle, rose, oak leaf and small cluster of flowers. In periphery, TRIA rosette JUNCTA rosette IN rosette UNO rosette. Attached to bucke and hung on a red ribbon.
Recipient: SIR FREDERICK TREVES

991 CORONATION MEDAL OF KING EDWARD VII
Ob. Crowned heads of Queen Alexandria and King Edward VII facing left. Tied wreath forms periphery and a crown attached above forms holder for ribbon. Behind neck on right, FUCH / 1901
Rev. Periphery, tied laurel wreath. In center E R VII with crown above. Ex. 26 JUNE 1902
Recipient: SIR FREDERICK TREVES
Campaign ribbon: Blue ribbon with red center stripes and white edge. Two other medals and one decoration are also on the one breast pin.
31 mm. Silver.

992 CORONATION MEDAL OF GEORGE V
Ob. Crowned busts of King George V and Queen Mary facing left. To left spray of roses, to right, spray of bay.
Rev. Beaded edge. In center GRV and above, a crown. Ex. 22 JUNE 1911
Recipient: SIR FREDERICK TREVES
Campaign ribbon: Medium blue with two narrow red center stripes. Two other medals and one decoration are also on the one breast pin.
32 mm. Silver.

802 CRIMEA 1854
Ob. VICTORIA – REGINA, Head facing left. Below, 1854 Signed H. WYON
Rev. Armed warrior being crowned by winged Victory, a female figure. To left, perpendicularly CRIMEA, to lower right, H. WYON SC
Recipient: DRESE. W. F. KEDDEL. OTTN. MED. STAFF.
Campaign ribbon: Light blue with yellow edge. One silver oak leaf bar with two acorns INKERMANN
36 mm. Silver.

816 CRIMEA 1854
Ob. Portrait bust of VICTORIA REGINA. Below, 1854. Signed B. WYON
Rev. Warrior being crowned by Victory. To left, CRIMEA (perpendicular)
Lower right, signed B. WYON SC
Three oak leaf bars: SEBASTOPOL, INKERMANN, ALMA
Recipient: ASST. SURGEON JAS. HANNAM. 49TH FOOT
Campaign ribbon: Light blue with gold edge.
38 mm. Silver.

810 DISTINGUISHED CONDUCT MEDAL OF WORLD WAR I
Ob. Bust of George V facing left. GEORGIVS V BRITT. – N: REX ET IND. IMP.
REV. FOR / DISTINGUISHED / CONDUCT / IN THE FIELD / – . . –
Recipient: 42939 PTE. A. SJT: – S. GRAYDON. 76 / F.A.R.A.M.C.
Campaign ribbon: Red and dark blue.
36 mm. Silver.

799 GHUZNEE – INDIAN CAMPAIGN MEDAL
Ob. Forts pictured. Below, GHUZNEE
Rev. Within tied bay wreaths 23 D / JULY / R.H.A. HUNTER . / ASST. SURGEON. / 2ND OR QUEEN'S REGT / – . – / a crown / 1839
Campaign ribbon: Red and green.
37 mm. Silver.

997 GRAND COMMANDER. SILVER BREAST DECORATION OF THE GRAND COMMANDER OF THE VICTORIAN ORDER
Large cut silver eight pointed star with smaller white enamel badge of the Order superimposed.
Recipient: SIR FREDERICK TREVES

1065 INDIA 1895
Ob. Portrait bust of Victoria facing left. VICTORIA – REGINIA — ET IMPERATRIX
Rev. Two warriors holding staff of flag, one on left holding gun, one on right with sword wearing turban. INDIA 1895
Recipient: 614 Ward Sweeper Paohoo Army Hospital Corps
Campaign ribbon; Purple and green. Three bars: PUNJAB FRONTIER 1897–98, TIRAH 1897–98, RELIEF OF CHITRAL 1895
36 mm. Bronze.

1066 INDIA 1854
Ob. Head of young Victoria facing left. VICTORIA – REGINA
Rev. Winged figure crowning seated warrior
Recipient: 30 Fooley Bearer M. Sayegadoo 27 Mad(ras) Infy.
Campaign ribbon: Red and black. One bar BURMA 1885–7
36 mm. Bronze.

819 NAVAL SICK BERTH AND LONG SERVICE MEDAL
Ob. Portrait bust GEORGVIS V BRITT: CAN: REX ET IND. IMP. Signed, B.M.
Rev. Battleship. Ex. DIUTURNE FIDELIS
Recipient: 948. B. BUTTERWORTH. SEN. RA. R.N.A.S.B.R. (Note; SEN. RA is Senior Reserve Auxiliary. R.N.A.S.B.R. is Royal Naval Auxiliary Sick Berth Reserve).
Campaign ribbon: Dark green.
38 mm. Silver.

989 PENINSULAR CAMPAIGN OF WELLINGTON AGAINST NAPOLEON'S FORCES. Hardest fought battles in the campaign.
Ob. Head of young Queen facing left. VICTORIA – REGINA Beneath head, 1848. On neck W. WYON.
Rev. Platform with lion below, on which Queen stands crowning a kneeling figure. Around periphery, TO THE – BRITISH ARMY. Ex. 1793–1814
Recipient: J. THOMPSON, ASST. SGE. ORD. M.D.
Campaign ribbon: Dark red with blue edge.
Two bars: ALBUHERA – BADAJOZ
35 mm. Silver.

990 PERSONAL GOLD MEDAL PRESENTED TO SIR FREDERICK TREVES, London.
Ob. Heads of Queen Alexandra and King Edward VII facing left. Before heads, ALEXANDRA, behind heads, EDWARD VII. To right behind neck E. FUCH / 1902.
Order of St. John decoration on coat of King. Tied laurel wreath forms edge.
Rev. POUR LE MERITE 1914 / 1915 / 1916 / 1917 / 1918 / 1919
Ribbon: Red, white and blue.
34 mm. Gold.

988 QUEEN'S SOUTH AFRICA – RHODESIA 1896
Ob. VICTORIA – REGINA. Crowned bust to left.
Rev. RHODESIA 1896 Ex. BRITISH / SOUTH AFRICA COMPANY. In center, lion wounded by spear.
Campaign ribbon: Dark blue and orange.

818 QUEEN'S SOUTH AFRICA
Ob. Portrait bust VICTORA REGINA ET IMPERATRIX
Rev. Army marching, sea and ship in distance. Victory on height extending wreath with right hand, holding banners in left arm. Above, SOUTH AFRICA

Recipient: D. J. MEZIES – CONACHER, SURGEON
Campaign ribbon: Gold with blue and red stripes. Bars; SOUTH AFRICA 1901, PAARDEBURG, CAPE COLONY
38 mm. Silver.

993 QUEEN'S SOUTH AFRICA
Ob. Portrait bust, crowned, facing left. VICTORIA REGINA – ET IMPERATRIX
Rev. Pictured figure of Victory standing above extending a wreath over an army marching below. At the right of the army (left of medal) is pictured the sea and a ship. Above SOUTH AFRICA
Recipient: SIR F. TREVES, K.C.V.O. C.B. CONSULTING SURGEON
Campaign ribbon: Three bars: Relief of Lady Smith, Tugela Heights and Cape Colony.
36 mm. Silver.

801 SOUTH AFRICA 1853
Ob. VICTORIA – REGINA. Crowned head to left. Signed, H. WYON
Rev. SOUTH AFRICA. Lion crouching against branches of bay. Below, 1853
Signed, L. C. Wyon
Recipient: STAFF SURGN. 2ND CLASS W, SALL, M.D.
Campaign ribbon: Gold with dark blue stripes.
36 mm. Silver.

814 ST. JOHN AMBULANCE
Ob. Portrait bust GEORGIVS V REX ET IND. IMP. Signed B.M.
Rev. Design around periphery. Inside, ST JOHN AMBULANCE BRIGADE. CORONATION 1911. Wreath around this. In center a crown.
Recipient: SUPT. SEC. H. BIRD.
Campaign ribbon: Deep orange with narrow blue stripes.
38 mm. Silver.

815 ST. JOHN LONG SERVICE AND GOOD CONDUCT MEDAL
Ob. Portrait bust: VICTORIA (maltese cross) D (maltese cross) G (maltese cross) BRITT (maltese cross) REG (maltese cross) F (maltese cross) D (maltese cross) IND (maltese cross) IMP, all within beaded border.
Signed, B & Co.
Rev. Center, coat of arms. Around it, HONI. SOIT. QUI. MAL. V. PENSE. Above, in circle, King's crown. Below, in circle, Queen's crown. To left, in circle, coat of arms. To right in circle, coat of arms. Flowers and spray between each circle. Around periphery, Magnus. Prioratus. Ordinis. Hospitalis. Sancti. Johannis, Jerusalem. In Anglia
Recipient: SUPT. SECT. G. BIRD. SHREWSBURY CORPS. 1912
Campaign ribbon: Black and red.
40 mm. Silver.

817 TURKISH CRIMEA 1855
Ob. Tied laurels around periphery. In center, symbols.
Rev. Cannon, anchor, flags. British flag in foreground. Ex. CRIMEA. Below, 1855.
Recipient: ASST. SURGEON JAMES HANNAM
Campaign ribbon: Rose with dark green edge.
39 mm. Silver.

COMMEMORATIVE MEDALS

1054 FRANKLIN, Benjamin (1706–1790). The FRANKLIN MEDAL OF THE UNITED STATES CONGRESS was struck in 1956 to commemorate the 250th anniversary of Franklin's birth, January 17, 1706. It is to be awarded by the Congress to the Societies, Institutions and Enterprises of which Franklin was a member, founder or sponsor.
Ob. Head to left. BENJAMIN FRANKLIN / 1706 – 1956 / Medal of the Congress / UNITED STATES OF AMERICA. Below LCF (Laura Gardin Fraser, Sculptor)
Rev. Sympols representing the many interests of Franklin. The key symbolizes his proof that lightning was electricity; the weather vane his interest in the better understanding among nations; the eagle on the vane represents his Americanism as do the thirteen stars; the caduceus stands for his service to medicine and in establishing our vast hospital system; the book represents his writing, printing and founding of libraries; two rosettes denoting his study of the ocean currents and the Gulf Stream; the shock of wheat his study in agriculture and vegetarianism. The fundamentals of everything he dealt with are on the medal, namely the elements—earth, air, fire and water. Words inscribed: WISE AND GOOD MEN ARE THE STRENGTH OF THE NATION

868 KISSINGEN, Commemorating discovery of medical springs at Kissingen.
Ob. BEDECKUNG DER HEILQUELLEN TAGOZY / UND PANDUR IN BAD KISSINGEN A building. Below, AUFGEFURHTM UND / VOLLENDET D. 15 MAY . 1849
Rev. Because of the condition of the medal the description cannot be read.

792 SUN YAT-SEN, Dr. (1867–1925). Father of the Chinese Republic.

Ob. Chinese characters around periphery. In beaded circle, bust facing left.
Rev. *MEMENTO* BIRTH OF REPUBLIC OF CHINA. In beaded circle oak and wheat garlands crossed and tied. In center, Chinese characters.
39 mm. Silver. Milled edge.

808 CENTURY OF PROGRESS. WORLD'S FAIR – INTERNATIONAL EXPOSITION / CHICAGO 1933

809 Ob. Youthful male figure standing on a platform, feet apart, head facing left, arms extended. To left, RESEARCH, perpendicular. Above, laurel branch. To left c. To right of figure, INDUSTRY, perpendicular. Above, a symbol. Below, signed ERZ (Emil Robert Zettler). Below, 1833–1933. Youthful figure of strength, energy and action represents the intellectual arch between nature's resources and man's work. From research and invention have come the great achievements of the century 1833–1933. The extended arms of the figure praise the work of science and industry and their great benefits to humanity.
Rev. Plan of the Exposition is curled into the circular shape of the medal. Above, points of compass. Around periphery, A-CENTURY - OF - PROGRESS - INTERNA - TIONAL-EXPOSITION-CHICAGO-1933
70 mm. Bronze (808)
39 mm. Bronze (809) reduction.

DISEASES

CHOLERA

967 MARSEILLES, France 1835
Ob. The city arms with, below, on and MASSILIA – CIVITAS Ex. CAQUE
Rev. In tied oak wreath, CHOLERA / 1835 / MARSEILLE / RECONNAISSANTE / –
58 mm. Bronze.

FAMINE

908 GERMANY 1816–1817
Ob. GIEB MIR BROD MICH HUNGERT. Female holding child. Another child standing by her side. Ex. LETT N
Rev. VERZAGET NICHT – GOTT LEBETN. Scale suspended from clouds between which IMAASBIER / 8½ K.R. Beneath left balance, 1163 L. Beneath right balance, 12 K.R. Lying below, anchor and sheaf of wheat. Ex. 1816 U: 1817 / L

793 HALLE, Germany (1846–1847)
Ob. On scroll above, NUN DANKET ALLE GOTT. Below, on scroll ERNDTESEEGEN 1847 / PSALM 50 V. 15. In field, men, women and children in field of grain giving thanks for a harvest.
Rev. *THEURE ZEIT* I SCH. WEIZEN 5 TH. 20 SGR. KORN. 5 TH. GERSTE 3 TH. 22 SGR. 6 PF. Second row, *HALLE 1846–1847* HAFER 2 TH. 5 SGR. KARTOFF. 2 TH. 1 LB. BROD 2 SGR. * In field, man, woman and two praying children around empty plates and baskets.
42 mm. Tin.

907 THURINGIA 1772
Ob. LIEB DIE BRUDER GOTT GIBTS WIEDER. (very badly worn) Joseph pointing to a sack and with left hand raised toward kneeling people. From his mouth, GOTT SEGNE EUCH Ex. DANTES / 1772
Rev. Covered with inscriptions hard to decipher (worn smooth) NO: 1771 HAT etc.
29 mm. Tin.

PLAGUE

794 BRUSSELS (BRUX) 1667
Ob. Arms of P. J. Armstorf (Treasurer of Brussels)
Rev. DIVVS. MICHAEL . PATRONVS. In circle St. Michael and Demon.
30 mm. Copper.

SMALLPOX

906 PARIS
Ob. Cow to left. Above a vaccine point and lancet. Ex. INSPERATO / SALUS. To left signed, DEPAULUS
Rev. In tied oak branches, VACCINATIONS / MUNICIPALES / DE PARIS / MDCCCXIV . / –
32 mm. Silver.

YELLOW FEVER

1040 BARCELONA, Spain 1821 (Please see Personal Medal AUDOUARD.)

HOSPITALS

914 GREENWICH, England. ROYAL HOSPITAL SCHOOL
Ob. VICTORIA D:G: BRITANNIER REG: F:D: Laureated head to left. Below, J. S. WYON
Rev. ROYAL HOSPITAL SCHOOL / GREENWICH. In beaded circle THE / W. P. WHITE / PRIZE
30 mm. Bronze.

913 HAMBURG, Germany KRANKENHAUS D. D. ISREAL GEMEINDE
Ob. SALMON HEINE . / MENSCHENLIEBE 1ST DIE KRONE ALLER TUGENDEN. Head to left.

Rev. KRANKENHAUS D. D. ISREAL: GEMEINDE. Hospital Ex. DER SEL. FRAU BETTY HEINE / ZUM UND ENKEN ERBAUT / VON IHREM GATTEN / HAMB. 1841.
45 mm. Bronze.

915 Ob. A building ruined by fire. Ex. KRANKENHOF 1813
Rev. Female with mural crown, seated resting right arm on shield, extends laurel branch. Ex. KRANKENHAUS 1823 / G. LOOS DIR. PFEUFFER FEC.
44 Bronze.

1043 LONDON, England—CHRIST'S HOSPITAL
Ob. EDWARD. VI. D. – G. ANG FR ET HIB REX. Bust of young King to right.
Rev. HEAR. READ. MARK, LEARN. In field an open book. Ex. CHRIST'S HOSPITAL / INST. MDIII

911 MANCHESTER, England. MANCHESTER INFIRMARY
Ob. MANCHESTER INFIRMARY AND / LUNATIC HOSPITAL. Buildings. Below, plants and pelican feeding its young. Ex. A. SEWARD. LANCASTER / 1796
Rev. SOUTH FRONT OF THE EXCHANGE AT LIVERPOOL. Building. A. SEWARD. LANCASTER. / 1796. Hole in top of medal.
43 mm. Bronze.

949 NEW YORK – GERMAN HOSPITAL
Ob. DEUTSCHEN – HOSPITALS. View of building. Above, a Maltese Cross between stars. Signed, C. L. CHAPELLE. SC. T.
Rev. ZUR ERINNERUNG / scroll / AN DIE 'FAIR' / ZUM BESTER DES / DEUTSCHEN HOSPITALS / NEW YORK / FEB. 1889. Between fleurs-de-lys
39 mm. White metal. Milled. Hole in top of medal.

1042 PARIS, France – MATERNITY HOSPITAL
Ob. SAINT VINCENT – DE PAULE. Bust to right. Near figure, JEUFFROY FECIT.
Rev. HOSPICE / DELA / MATERNITE
40 mm. Bronze.

1035 ROME, Italy – INSANE ASYLUM
Ob. PIVS. IX. PONT. – MAX. AN. XXI. Bust to left. Signed, F. Bianchi, S.
Rev. Building. Ex. HOSPITIVM. DEMENTIBVS. CVRAND / COMMODIVS. INSTAVRATVM / AMPLIATVM. Above Ex. F. APEVRRL. ARCH. – I. BIANCHI. S.
44 mm. Silver.

912 TRIESTE, Italy – CIVIC HOSPITAL

950 Ob. OSPEDALE CIVICO DI TRIESTE. Building. Ex. D. CANZANI F.
Rev. In tied oak and laurel wreath, ERETTO IL 1833 – 1840 / APERTO IL 1841
48 mm. Bronze.

HYDROTHERAPY

952 VICHY, France.
Ob. Head of Aesculapius, with staff over left shoulder.
Rev. In oak branches, tied with rosette above, CIE. DES / EAUX THERMALES / DE VICHY
39 mm. Silver. Octagonal.

HYGIENE

909 LONDON—1893
Ob. H.M.G.M. QUEEN VICTORIA. Crowned bust to left. Below, to left. L.
Rev. INTERNATIONAL EXHIBITION FOR HYGIENE, PHARMACEUTICS AND FOOD. Below, .LONDON 1893. Crossed and tied laurels in center.
65 mm. Bronze.

MEDICAL COLLEGES

902 LIVERPOOL, England. LIVERPOOL ROYAL INFIRMARY MEDICAL SCHOOL.
Ob. THE ROYAL INFIRMARY MEDICAL SCHOOL LIVERPOOL. Building below, ESTABLISHED / ANN: DOM: / 1834
Rev. Crossed laurels . – . – (worn off) LIVERPOOL
49 mm. Bronze.

905 PARIS – ACADEMY AND SCHOOL OF SURGERY
Ob. LUDOVICUS XVI REX CHRISTIANIIS. Bust to right. Below, B. DUVIVIER F.
Rev. ARDES ACADEMI. ET SCHO. CHIRURGO. Open court surrounded by Ecole de Medecine. Ex. REGIA MUNIFICENTIA INCHOAT / MDCCCLXX ABSOL: / MDCCLXXIV. Signed, N. GATTEAUX. F.
59 mm. Bronze.

901 PARIS – COLLEGE OF PHARMACY
Ob. SCHOLA PHARMACEUTICA PARISIENSIS. Head of Aesculapius to left.
Rev. ET VIGIL ET PRUDENS. Cock to left facing erect serpent.
34 mm. Silver. Octagonal.

903 PARIS – FACULTY OF MEDICINE
Ob. Bearded bust to left. In front, INNOKPATHE. Behind, the staff of Aesculapius. Below, GALLE F.
Rev. FACULTE DE MEDECINE DE PARIS. Erect staff of Aesculapius. Ex. MDCCCIX.
32 mm. Bronze.

904 Ob. Bearded head of Aesculapius to left with fillet. Behind, his staff inclined outward. Below, DUPRE. F.
Rev. PRIX / DE CLINIQUE / INTERNE / FONDE PAR LE BARON / CORVISART . / – / FACULTE DE MEDECINE / DE PARIS 1810.
40 mm. Bronze.

1029 PHILADELPHIA, Pa. MEDICO-CHIRURGICAL COLLEGE
This is not a medal but a large shield-shaped plaque holding bronze insignia of the Medico-Chirurgical College.

900 VIENNA—VIENNA MILITARY MEDICAL COLLEGE
Ob. IOSEPHVSII AVGVSTVS. Laureated head to right. Below, DONNER
Rev. ACADEMIA / MEDICO / CHIRVRGICA / MILITARIS (Strick in 1785 upon foundation of the Academy)
35 mm. Silver.

899 VIENNA – VIENNA VETERINARY COLLEGE
Ob. FRANCISCVS 1. AVSTRIAE INPERATOR. Laureated bust of Franz I to right. Below, J. HARNISCH. F.
Rev. MVNIFIGENTIA AVGVSTI. Building. Ex. INSTITVTVM / VETERINARIVM / FVND. VIND. / MDCCCXXIII.
50 mm. Silver.

MEDICAL SOCIETIES—INTERNATIONAL

795 DENTAL, WORLD'S INTERNATIONAL CONGRESS, Chicago 1893.
Ob. Tied oak branches with, between their tips 1893. Within a spread eagle to left, with laurel and arrows. Upon its breast a shield with COLUMBUS / 1492. Above, four flags, between which CHICAGO – irradiates star . 1839 (upon a curved base). Around 12 stars.
Rev. THE WORLD'S COLUMBIAN DENTAL CONGRESS CHICAGO AUGUST 1893. In laurels tied by scroll, WORLD'S COLUMBIAN / rosette / EXPOSITION
64 mm. Bronze.

1026 MEDICINE, VIII INTERNATIONAL CONGRESS, Washington 1887
Ob. UNITED STATES OF AMERICA / x FOUNDER OF THE REPUBLIC x Nude bust of Washington to right, after Stuart. Below, C. E. BARBER. F.
Rev. INTERNATIONAL MEDICAL CONGRESS . / N.S. DAVIS, PRES. J. B. HAMILTON, SEC GEN E. S. F. ARNOLD, TREAS. J. M. TONER, REG. In circle, Aesculapius seated with serpent staff and serpent feeding at his side. Before him a seated female with sick child. By their side, two aged cripples, one with crutches and other with bandaged head and cane. Ex. WASHINGTON 1887. Signed, C. E. BARBER, F.
76 mm. Bronze.

1034 MEDICINE, INTERNATIONAL CONGRESS, Verona, Italy 1950.
Ob. Bust to right. GIORNATE MEDICHE INTERNAZIONALI. 1950. Ex. G. DOMACK. Signed, LORIOLI
Rev. *ETLAVDISAMATRIS (cross) ESTIVSTILATRI (cross) *VRNSHED. In center, building, below which VERONA
37 mm. Bronze.

926 PHYSIOLOGY – PARIS 1920
Ob. M. F. XAVIER – BICHAT. Bust to left. Below, L. DUFOUR. F.
Rev. In tied oak and laurel branches, CONGRES / DE PHYSIOLOGIE / – / PARIS – 1920 / – below, H. DUBOIS

924 SURGERY—VI INTERNATIONAL CONGRESS, London, 1923
Ob. INT. SURG. SOC. VI CONGRESS / . LONDON 1923. Male figure seated.
Rev. Blank.
35 mm. Bronze.

964 TUBERCULOSIS—1ST INTERNATIONAL CONGRESS 1948, Lille, Paris.
972 Ob. Bust to left. DR. ALBERT. – . CALMETTE. On pin above, B.C.G. / 1ST CONGRES / INTERNATIONAL . 1948. On pin, B.C.G.
Rev. Periphery..RECHERCHES SUR LA TUBERCULOSE. 1900–1933. In enclosed field, BACILLE / CALMETTE GUERIN / INSTITUT PASTEUR / LILLE-PARIS

MEDICAL SOCIETIES—LOCAL

820 AMERICAN PHYSICIANS ART ASSOCIATION
Ob. AMERICAN PHYSICIANS. ART ASSOCIATION. Center, the map of North America and South America. To left, the caduceus and artist's palette and brushes.
Rev. Periphery, AWARD OF MERIT. EXHIBITION. Broken wreath. J. MONROE / THORINGTON. M.D. / OIL / 1944
52 mm. White metal.

821 Ob. AMERICAN PHYSICIANS. ART ASSOCIATION. Center, the map of North America and South America. To left, caduceus and artist's palette and brushes.
Rev. Periphery, AWARD OF MERIT. EXHIBITION. Broken wreath. J. MONROE / THORINGTON. M.D. / OIL 1946
52 mm. White metal.

962 Ob. AMERICAN PHYSICIANS. ART ASSOCIATION. Center, the map of North and South America. To left the caduceus and artist's palette and brushes.
Rev. Periphery, AWARD OF MERIT, EXHIBITION. J. MONROE THORINGTON. M.D. / PASTEL / 1948
52 mm. White metal.

920 GERMANY—GERMAN NATURALISTS AND PHYSICIANS—XXXII CONVENTION, Vienna 1856.
Ob. DURCH MAJESTAET MIT - VEREINTE KRAFT - DURCH RÖMER CROSS - DURCH FROMMEN SINN - / MIT GOTT VERBÜNDET GLANZ UMGEBEN / IHR NEUES LEBEN / FEST BEGRÜNDET. In festoon of fruit and leaves, Vienna seated facing with crown, each hand resting on shield. On margin at equal distances four medallions. Above, with hand to right FRANZ 10 S.I.: (the regeneration of Vienna). At right, bust to left of MARC:AVREL (founder of the city). Below, bust to left of HEINR:JSM GOTT (builder of the Stephans Kirche). At left bust of LEOPOLD I. Signed, C. RADNITZKY
Rev. Isis Polymamma, nude and facing. Above, DER / XXXII VERSAMMLUNG / DEUTSCHER / NATURFORSCHER U: AERZTE / DIE STADT WIEN / M.DCCC - LVI two leaves. On rim, in arabesque the emblems of the three Kingdoms of Nature, viz. female head (star above); horse's head: bat; owl; tortoise; toad; fish; shell; bee; leaf and acorn; crystals; scorpion; fly; fish beetle; serpent; lizard; eagle's head; lion's head.
69 mm. Bronze.

923 ITALY, ITALIAN SCIENTISTS - III CONGRESS, Florence 1841.
Ob. A tribute to Galileo, a circular temple with statue. Ex. FIRENZE 1841. / NIDERÖST F.
Rev. PROVANDO E RIPROVANDO. In circle NEI CONGRESSI / DEGLI / SCIENZIATI ITALIANI / L'ACCADEMIA / DEL CIMENTO / RINASCEVA / - . - / Ex. Crossed tied branches.
55 mm. Silver.

953 LYONS—SOCIETE DE MEDECINE
Ob. MEDICINAE - PHILOSOPHIAM. Bust to right. Below, Greek letter. On neck, BARRE F.
Rev. STUDIO - ET. ARTE. Palm tree encircled by serpent. Ex. SOC. MED. LUDG. / INST. 1789
30 mm. Silver.

954 PARIS, France. ACADEMY OF MEDICINE
Ob. LOUIS XVIII ROI - DE FRANCE. Head to right. Below, BARRE F.
Rev. In tied laurels, ACADEMIE / ROYAL / DE MEDECINE
30 mm. Silver octagonal.

921 PARIS, France. SOCIETE DE MEDECINE
Ob. Crossed oak branches entwined by two serpents feeding from patera. Within, A / L'HUMANITE Signed DUV
Rev. In tied laurels, PRIX / DE MEDECINE / DE PARIS
53 mm. Bronze. Struck in 1798

798 PHILADELPHIA PEDIATRIC SOCIETY
Ob. THE PHILADELPHIA PEDIATRIC SOCIETY. Ex. FOUNDED 1896 In field, bambino.
Rev. Blank.
68 mm. Lead.

1036 TOULOUSE, SOCIETE DE MEDECINE
Ob. ARCHAE TYPUS. HIC. Bust of Hippocrates to left. Behind, the serpent staff. Below, E. DUVOIS F. DE PUYMAVRIN F.
Rev. In laurel branches tied by rosette, SOCIETAS / MEDICA / TOLOSANA . - 1827
30 mm. Bronze.

919 UNITED STATES—AMERICAN MEDICAL ASSOCIATION
Ob. Aesculapius erect, resting on staff, a skull at his feet, to right. Below, PAQUET. F.
Rev. AMERICAN MEDICAL ASSOCIATION / ORGANIZED 1847. Crossed and tied laurels.
41 mm. Bronze.

797 UNITED STATES. AMERICAN LARYNGOLOGICAL-RHINOLOGICAL AND OTOLOGICAL SOCIETY. XIII Meeting 1907 KILLIAN, Dr. GUSTAV (1860 - 1921). FRIEDBURG, Germany.
Ob. *BRONCHOSCOPY* MCMVII * FRONTAL. SINVS. OPERATIONS * Bust slightly to left. Signed, .J. E. Roine / .FECIT. (incused)
Rev. AMERICAN. LARYNGOLOGICAL . RHINOLOGICAL . AND . OTOLOGICAL SOCIETY facing outward. Serpent entwining antique lamp. Below, .IN. RECOGNITION.OF.HIS./.LEADERSHIP./*.IN.*/.LARYNGOLOGY . AND TWIG / TWIG. RHINOLOGY. AND . / . IN. MEMORY. OF . THE . / . GOODFELLOWSHIP. OF . / . PROFESSOR . / . GVSTAV. KILLIAN. / . 1907.
68 mm. Bronze.

MISCELLANEOUS

1063 CENTENNIAL MEDAL OF THE SQUIBB COMPANY
Ob. Mother and child facing left. SCIENTIAE . MEDICINAE . ARTIQVE . SALVTARI Laurel sprays at bottom.
Rev. Sun's rays above which CENTENNIAL. Below three columns above RELIABILITY. On Columns UNIFORMITY PURITY EFFICACY

NON-MEDICAL

910 HOLLAND
Ob. DELFF. IN. Crown and shield in center.
Rev. CHARI / TAS
32 mm. Lead.

973 RELAY CARNIVAL OF THE UNIVERSITY OF PENNSYLVANIA. Large plaque made by Dr. R. Tait McKenzie in 1925.
At left, Benjamin Franklin seated in a chair, with olive branch in left hand and shaking hands with his right hand with the first member of the four on the relay team approaching. Below chiar, RTM. 1925. Below, UNIVERSITY / OF PENNSYLVANIA. Above group, RELAY CARNIVAL. FOUNDED 1895

The following medals were in the collection of Dr. R. Tait McKenzie, who designed and modelled many of the medical medals in the College Collection. They were purchased by Drs. William G. Leaman, J. Monroe Thorington and Edward F. Corson. They are testimonials of a physician's triumph over his own physical weakness—the same determination that enabled him to master sculpturing with no previous training. Most of the awards are for athletic achievements.

AWARDED TO DR. R. TAIT MCKENZIE FOR:

1000 HIGH JUMP in 1890—1ST PRIZE, BY THE MONTREAL AMATEUR ATHLETIC ASSOCIATION
Ob. Tied wreath in center with male figure executing high jump.
Rev. 1890 / 1st prize / won by / R. T. McKenzie.
On red and gray ribbon. Above, on metal bar, M.A.A.A. Below, on bar, HIGH JUMP

1001 120 YARD HURDLE RACE, 1890. 1ST PRIZE, BY THE MONTREAL AMATEUR ATHLETIC ASSOCIATION
Ob. A cross with circle in center on which is 1890
Rev. 1ST PRIZE / won by / R. T. McKenzie / 19½ sec.
On red and gray ribbon. On top bar M.A.A.A. From this is hung another bar with 120 yds. HURDLE RACE

1002 HIGH JUMP. 1ST PRIZE (silver), BY THE MONTREAL AMATEUR ATHLETIC ASSOCIATION
Ob. Small cricle showing, within a male figure executing a high jump
Rev. 1ST PRIZE / won by / R. T. McKenzie / 1889
On red, white and blue ribbon with upper bar, M.A.A.A. and lower bar, HIGH JUMP

1003 RUNNING HIGH JUMP, 1889. HANDICAP 1ST PRIZE, BY THE MONTREAL AMATEUR ATHLETIC ASSOCIATION
Ob. Four circles alternating with four leaves. Center circle shows male figure pole vaulting.
Rev. Handicap / 1ST PRIZE / R. T. McKenzie / Oct. 5th 1889
Red and gray ribbon with M.A.A.A. bar and bar RUNNING HIGH JUMP

1004 RUNNING HIGH JUMP, 1890
Ob. Metal ribbon above, VIS ET VIRTUS. A Maltese Cross with A A C on each segment. In center, three legs and wings alternating.
Rev. 1ST PRIZE / Running High Jump / won by / R. T. McKenzie / 5 ft. 4 in. / 1890. Red, white and blue ribbon.

1005 RUNNING HIGH JUMP, 1890 1ST PRIZE
Ob. On bar, R. T. McKENZIE / 5 ft. 5½ in.
Rev. On medal, 1ST PRIZE / RUNNING HIGH JUMP. In center, N.I.A.A. Below, 1890

1006 RUNNING HIGH JUMP (silver)
Ob. On bar RUNNING HIGH JUMP. On medal, four oak leaves and tied wreath. In center, a pole vaulter.
Rev. Won by / R. T. McKenzie / Oct. 18

1007 120 Yard Hurdle, 1890. 2ND PRIZE (silver)
Ob. Maltese cross with A A C and a diamond-shaped object in each segment. In circle in center, three legs and three pairs of wings alternating.
Rev. 1890 / 120 yds. HURDLE / 2ND PRIZE / R. T. McKENZIE.

1008 HIGH JUMP, 1ST PRIZE BY UNIVERSITY COLLEGE, TORONTO
Ob. On bar above, 1890. Below on metal ribbon, UNIVERSITY COLLEGE TORONTO Shield surmounted by lamp. On shield, chevron with crown and below, a badger. Around shield. DARVM CLARIS LVCFM OAPE.
Rev. 1ST PRIZE / won by / R. T. McKENzie / Oct. 24 1890 / 5 ft. 9 in. / HIGH JUMP. Medal on blue and gold ribbon.

1009 SILVER MEDAL, BY McGILL UNIVERSITY ATHLETIC ASSOCIATION
Ob. On bar, McG.U.A.A. 1889. On medal, two figures.
Rev. Tied maple wreath. In center a shield surmounted by a crown In shield three birds.

Above, McGILL UNIVERSITY / MONTREAL. On edge, R. T. McKENZIE 1887. Red and gray ribbon

1010 GOLD MEDAL, BY McGILL UNIVERSITY
Ob. Two male figures.
Rev. Tied maple wreath. In center a shield surmounted by a crown. In shield three birds. Above, McGILL UNIVERSITY / MONTREAL, On edge 1889 ROBERT T. McKENZIE

1011 THREE BRITISH MEDALS ON ONE BAR WITH CAMPAIGN RIBBONS
Star with crossed swords (First World War)
King's medal of the same war with Major R. T. McKenzie on edge.
Victory medal

1012 MEDAL OF THE VIII OLYMPIAD, PARIS 1924
Ob. Winged Victory crowning athlete, and four other athletes behind him in line. Ex. Raoul Bernard
Rev. City in distance. Below, VIII E OLYMPIADE / PARIS 1924 / R.B.
55 mm. Bronze.

1013 MEDAL OF THE XTH OLYMPIAD, Los Angeles 1932
Ob. Men carrying victorious athlete on shoulders.
Rev. Victory left, seated, holding a wreath in right hand. Stadium in background. To right, XTH / OLYMPIAD / LOS ANGELES / 1932
55 mm. Bronze.

1014 LOUISIANA PURCHASE (silver)
Ob. In circle eagle with wings spread. Below on plate, SILVER MEDAL / LOUISIANA . PVRCHASE . / . EXPOSITION . Below, two dolphins.
Rev. Two female figures in circle. Around circle, VNIVERSAL . EXPOSITION. SAINT . LOVIS . VNITED STATES OF AMERICA . Ex. M.C.M.IV.
66 mm. Silver. Square.

1016 WAR MEDAL
Ob. Above our building, MENIN GATE
Rev. IN / REMEMBRANCE / YPRES / 24. VII. 27

1017 PUBLIC SCHOOL ATHLETIC LEAGUE MEDAL
Shows runner set for race. Above, P.S.A.L.

1018 ELEMENTARY SCHOOL BASE BALL CHAMPIONSHIP MEDAL 1907
Ob. Naked male figure holding small statue. Above, P.S.A.L.
Rev. ELEMENTARY / SCHOOLS / BASE BALL / CHAMPIONSHIP / 1907 / BOROUGH OF /
42 × 22 Sterling, on red and white ribbon.

1019 SWIMMING AWARD
Medal with scalloped edge. Tied laurel wreath within which blue enamel circle with Y.M.C.A. SWIMMING AWARD . / LIFE SAVER. Within this a white triangle.
32 mm. Sterling on black leather fob.

1020 OLYMPIAD, STOCKHOLM 1912
Ob. Head of Gustav V facing left. GUSTAF V. SVERIGES . KONUNG
Rev. FEMTE / OLYMPIADEN / STOCKHOLM 1912. Below tied branches and three crowns.
31 mm. Silver. Medal on fob of light blue and yellow ribbon and surmounted by a crown.

1021 ST. ANDREWS SOCIETY OF PHILADELPHIA. Edge in a wreath.
Ob. Within wreath an oval of green enamel on which NEMO. ME. IMPUNE. LACESSIT. In. center, symbols.
Rev. Around periphery ST. ANDREWS SOCIETY OF PHILADELPHIA FOUNDED 1749. In center engraved, R. TAIT / McKENZIE / M. D. / 1907. On dark blue ribbon.

1022 GOOD TURN TOKEN
Ob. Bust of Lincolm facing right. Below, LINCOLN. Periphery, NO MATTER HOW MUCH PROVOKED, DO NOTHING IN ILL TEMPER OR MALICE.
Rev. In center a boy with a wheel behind which, ROT-ARY / THE - BOY / INTERNATIONAL. Periphery, LEST WE FORGET "DO A GOOD TURN DAILY" / COPY RIGHT 1920. W. E. WALSH / ROTARY CLUB, MORRIS, ILL. / GOOD TURN TOKEN

1027 MEDAL BY R. TAIT McKENZIE
Ob. In center naked male figure in act of throwing ball. REJOICE / OH / YOUNG MAN IN / THY YOUTH
Rev. In center four naked runners. Above them three flying geese and below, a running gre hound.
74 mm. Bronze.

1028 MEDAL BY R. TAIT McKENZIE
Ob. Three naked male athletes jumping a hurdle, with below, THE JOY / OF EFFORT

NURSING

918 BRUSSELS—RED CROSS
Ob. LEOPOLD II ROI—DES BELGES. Head to left.
Rev. COMITE CENTRAL DE SECOURS AUX BLESSEES. Geneva cross. Below, BRUXELLES Ex. 1870

917 HOLLAND—RED CROSS
Ob. Twenty armorial shields arranged in circle with names of their respective countries in Dutch, within center the arms of Geneva. Above, GENEVA on ribbon. Below, XXVI. OCT. 1863 / S. DE. VRIES. LA HAYE
Rev. ANIMA. VULNERATORUM. CLAMAVIT rosette 22. AUGUSTUS. 1864 rosette
In circle, flag with Geneva cross. Above, 1870. Below, JOB. XXVI. 12
41 mm. Bronze.

796 UNITED STATES—AMERICAN RED CROSS
Ob. WOODROW WILSON / rosette. NEUTRALITY . . . HUMANITY. rosette. Bust to left. Signed, Tiffany & Co.
Rev. .AMERICAN RED CROSS BAZAAR. NEW YORK. OCT. 22 to 31. 1914. In field RELIEF FUND / FOR / SOLDIERS, WOMEN / AND CHILDREN / - . - / GRAND CENTRAL / PALACE
32 mm. Gilt.

The following medical medals received since April 1944 when the first catalogue was published, are duplicates of medals described in that catalogue. For descriptions please see MEDICAL MEDALS IN THE COLLECTION OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA: ELLA N. WADE, BULL. MED. LIBR. ASSN., VOL. 32, NO. 2, APRIL 1944, or reprint of same.

PERSONAL MEDALS

Medal		*Duplicate of:*
836	BOERHAAVE, Dr. Herman (1668–1738)	688
857	GALL, Dr. Franz Joseph (1758–(1828)	738
858	GERHARD, Dr. William Wood (1800–1872)	616, 714
861	HALLER, Dr. Albrecht von (1708–1777)	689
862	HUMBOLDT, Friedrich Heinrich Alexander von (1769–1859)	696
936	JENNER, Dr. Edward (1749–1825)	661
937	LAVETER, Rec. John Caspar (1741–1801)	604
938	LEIDY, Dr. Joseph (1823–1891)	745
942	PARÉ, Dr. Ambroise (1509–1590)	685
883, 943	REDI, Dr. Francesco (1626–1697)	657
881, 882, 1030	RUSH, Dr. Benjamin (1745–1813)	668, 691
1058	SMITH, Dr. Theobald (1859–1934)	749, 751
946	SOEMMERLING, Dr. Samuel Thomas von (1755–1830)	692
807, 948	WIDAL, Prof. F. (1862–1934)	635, 683, 718

HOSPITALS

916 METHODIST HOSPITAL, Philadelphia, Pa. 755

HYGIENE

951 U. S. SANITARY COMMISSION, Philadelphia, Pa. 705

MEDICAL SOCIETIES—LOCAL

922 PARIS—SOCIETE DE MEDECINE LEGALE 727

BADGES

AMERICAN AMBULANCE PINS

942 Bronze shield with wings at each side and below, FRANCE. Worn by Dr. J. Monroe Thorington in World War I.

943 Red, white and blue enamel shield worn by Dr. J. Monroe Thorington in World War I.

945 World War I ambulance pin FRANCE 1914

AMERICAN MEDICAL ASSOCIATION BADGES

924 Chicago, June 22–25, 1948

925 Atlantic City, 1949

AMERICAN PHYSICIANS ART ASSOCIATION

920 Ninth Annual Exhibition, Atlantic City, 1947
Ob. Artist's palette. Below, A.P.A.A.
Rev. 1947. Sterling badge on blue and white ribbon presented to Dr. J. Monroe Thorington as a token of appreciation for participation in the exhibition.

AMERICAN PHYSICIANS AND SURGEONS

911 Congress of American Physicians and Surgeons, Atlantic City, 1919.
Ob. In gold letters on blue enamel margin, CONGRESS OF AMERICAN PHYSICIANS & SURGEONS. Ex. .ATLANTIC CITY. 1919. White enamel shell on gold background. On shell, a lighthouse, ship and emblems of ophthalmology. (pin)

AMERICAN PSYCHIATRIC ASSOCIATION

906 Centennial Meeting held in Philadelphia. (Card in lieu of button).

AMERICAN RED CROSS

905 Donor's pin given to the donor after three donations.
Ob. AMERICAN RED CROSS. Ex. BLOOD DONOR. In center, shield against sprays of laurel.
Rev. Blank.

916 Donor's button. (Bronze)
Ob. AMERICAN RED CROSS In center a shield surrounded by laurel. Ex. BLOOD DONOR Above shield, PRO PATRIA

917 Donor's button. (Silver)
Ob. AMERICAN RED CROSS In center, shield with laurel. Above, PRO PATRIA Ex. BLOOD DONOR The red ribbon attached indicates that the donor qualifies for the

"Gallon of Blood Club" (i.e. 8 or more). Some gave 30 or 40 donations. The silver button was given to all donors who received the bronze button after his third donation.

BRUSSELS RED CROSS

921 Please see Medical Medal 918

FIRST WORLD WAR

927 Button worn by Dr. James Thorington during the First World War. These were worn by physicians who were not in the armed services.

HARVARD TERCENTENARY

922 Badge on green ribbon. Please see Medical Medal 734. The badge is a reduction of the medal.

HEMATOLOGY

944 Badge of the Congress of the International Society of Hematology held in Boston August 1956. On red, white and blue ribbon.

MEDICAL SOCIETY OF PENNSYLVANIA

912 Twenty buttons of the society dating from 1905 to 1943, some of celluloid and some of metal. All similar.

OPHTHALMOLOGY

913 English Speaking Ophthalmic Convention, July 1925. Frame on a pin with the name, Dr. Zentmayer, on card.

908 International Congress of Ophthalmology, Amsterdam 1929

Ob. OPHTHALMOLOGICUM – 1929 – CONCILIUM. Blue lettering on china. In circle, owl sitting on a perch. To left, a candlestick and lighted candle. To right, spectacles.

Rev. Delft / cxxy / Ao 1655. Attached to a red, white and blue ribbon with, on card, W. ZENTMAYER M.D. / U.S. AMERICA

910 International Congress of Ophthalmology, Washington, D.C. 1922

Ob. AN INTERNATIONAL CONGRESS OF OPHTHALMOLOGY. In center, Capitol building Washington, D.C. Above, on ribbon WASHINGTON – APRIL 1922. Caduceus above and below. Red, white and blue ribbon. On pin, Zentmayer

OPHTHALMOLOGY AND OTOLARYNGOLOGY

915 Five badges of the American Academy of Ophthalmology and Otolaryngology. Small metal frame with name of Fellow (Zentmayer) attached to pin. Ribbon attached. Dates: 1921–1923–1925–1928–1929

PEDIATRICS

929 Card in lieu of badge of the American Academy of Pediatrics, Boston 1953

919 Badge of International Pediatric Congress, New York 1947. Around periphery, FIFTH INTERNATIONAL CONGRESS NEW YORK 1947. In center, head of child.

918 1st Pan American Congress of Pediatrics, Washington, D.C. 1947. In center, maps of North and South America and clasped hands. On pin, A.A.P.

PHILADELPHIA COUNTY MEDICAL SOCIETY

914 Five member badges of the Postgraduate Institute of the County Medical Society. These are frames attached to pins bearing members' names. To them are attached ribbon badges. Dates: 1921–1938–1939–1943–1944

929 Card of the 17th Postgraduate Institute and Convention, Philadelphia 1953

POLIOMYELITIS

923 First International Poliomyelitis Conference, New York 1948.

SURGEONS BADGE

926 Used by James Thorington, M.D. during his service with the Panama Railroad, 1881–1889. In center, locomotive in gold on red ground. In gold letters on blue enamel, Panama Railroad Company.

TUBERCULOSIS

907 International Congress, Amsterdam 1932

Ob. .ANTHONI . VAN . LEEUWENHOEK . Ex. 1932 In beaded circle, bust of Leeuwenhoek, facing.

Rev. INTERNATIONALE TUBERCULOSE CONFERENTIE. In field at top, red patriarchal cross. Below, DEN HAAG / AMSTERDAM / 1932. Attached to pin.

WORLD MEDICAL CONGRESS

930 Held in 1947

BADGES WORN BY DR. R. TAIT MCKENZIE ON VARIOUS OCCASIONS.

AMERICAN PHYSICAL EDUCATION ASSOCIATION

931 Small gold and onyx charm with A P E A. Engraved on back, R. T. MCKENZIE / PRESIDENT / 1912–1915

932 Small pin in shape of shell, with A C, and CONTRIBUTING MEMBER 1924

BRITISH MEDICAL ASSOCIATION

935 Held in Edinburgh, 1927 (pin)

OLYMPIAD

937 Official badge of the VIII Olympiad, Paris 1924

934 Xth Olympiad, Los Angeles 1932

Technical sports badge on multicolored ribbon. At top, XTH / OLYMPIAD / LOS ANGELES / 19 – 32. Five circles below, entwined with bay branches. In three circles, CITIUS – ALTIUS – FORTIUS. Below, OFFICIAL

OLYMPIC GAMES

933 St Louis 1904

Ob. Octagonal badge with naked running figure OLYMPIC GAMES SAINT LOUIS USA 04. Referee dumbbell badge on red, white and blue ribbon. On ribbon is stamped, Aug. 20–31 / Sept. 1–3–1904

Rev. 1803 / UNIVERSAL EXPOSITION / OLYMPIC GAMES / 1904 / PHYSICAL

CULTURE / FREDERICK / J. V. SKIFF / DIRECTOR / EXHIBITS /
Ivy and three shields pictured.

OUTDOOR AND FIELD CHAMPIONSHIP

936 58th Annual Meet, Philadelphia 1934. Official badge. Green ribbon.

UNIVERSITY OF PENNSYLVANIA RELAY CARNIVAL BADGES

Referee badge for:

938 39th Relay Race, 1933
939 40th Relay Race, 1934
940 41st Relay Race, 1935
941 43rd Relay Race, 1937

MEDICAL COINS

15 ACILIUS ca. 55 B.C. (Physician)
Ob. Head of Salus to right. Behind head SALVTIS
Rev. Valetudo (Hygeia) feeding serpent, standing facing left with knee bent and left hand resting on column.
20 mm. Silver. Roman.

3 AGRIGENTUM / SICILY
Ob. Young head to right.
Rev. Asklepios standing
19 mm. Greek

22 ANTONINUS PIUS 138–161 B.C.
Ob. Laureated head facing right. A break in bottom of coin.
Rev. Salus feeding serpent over altar. ELYS – KVO S – C
30 mm. Roman

4 ASKLEPIOS Tauric Chersonesus
Ob. Asklepios standing.
Rev. Hygeia standing feeding serpent.
20 mm. Greek

5 ASKLEPIOS (Epidaurus) 323–240 B.C.
Ob. Head of Asklepios to right.
Rev. Coiled serpent.
15 mm. Greek.

6 ASKLEPIOS (Epidaurus) 323–240 B.C.
Ob. Head of Asklepios to right.
Rev. "E" in laurel wreath.
13 mm. Greek

17 ASKLEPIOS (Pergamum / Mysia) ca. 2nd century B.C.
Ob. Head of Asklepios to right. Laurel wreath on head.
Rev. Serpent staff.
15 mm. Pergamum in Roman Asia.

1 CARACALLA (Pergamum) 211–217 A.D.
Ob. Head of Caracalla facing right.
Rev. Emperor on horseback followed by soldiers. In front statue of Aesculapius on column. (Rare)
42 mm. Roman.

2 CARACALLA 211–217 A.D.
Ob. Head facing right.
Rev. Aesculapius standing between Telesphorus and the omphalos.
30 mm. (Roman. (Rare)

9 CARACALLA 211–217 A.D.
Ob. Head to right.
Rev. Aesculapius standing holding serpent staff. To right omphalos (globe).
19 mm. Silver. Roman.

10 CARACALLA 211–217 A.D.
Ob. Wreathed head to right.
Rev. Aesculapius standing with serpent staff; to left Telesphorus (his son); to right omphalos.
18 mm. Silver. Roman.

25 CARACALLA Serdica / Thrace 211–217 A.D.
Ob. Bust of Caracalla facing right.
Rev. Aesculapius with serpent staff.
25 mm. Roman.

20 CRISPINA (wife of Commodus)
Ob. Head facing right. Back of head Crispina. In front, AVGV – – –
Rev. Salus seated facing left, feeding serpent. S – C
30 mm. Roman.

21 CRISPINA (wife of Commodus)
Ob. Head facing right. Behind head CRISPINA. In front, AVGVGTA
Rev. DIS GENITALTEVS around altar.
18 mm. Roman.

24 ELAGABEL and JULIA. Marcianopolis / Moesia
Ob. Bust of Elagabel and Julia Maesa facing each other.
Rev. Coiled serpent. "E" to left.
25 mm. Greek. From an old English collection of medical coins.

11 HADRIAN 117–138 A.D.
Ob. Laureated head to right.
Rev. Salus standing feeding serpent. COS S – C
26 mm. Roman

12 HADRIAN 117–138 A.D.
Ob. Head and part of shoulder to right.
Rev. Salus facing right feeding serpent. S – C
26 mm. Roman

16 MARCUS AURELIUS 161–180 A.D.
Ob. Laureated head to right, behind which IMPCA – in front, ANTONIVS AUG – – –
Rev. Salus feeding serpent, standing facing left. Serpent coiled around altar. Ex. COS III, Periphery: SALVTIAVCVSTORTRPXF S – C
30 mm. Roman.

23 MARCUS AURELIUS Nikaia / Bithynia
Ob. Bust of Marcus Aurelius facing right.
Rev. Hygeia standing facing right with patera and serpent. HIKA – EAN
25 mm. Greek.

26 MARK. Commemorative German mark commemorating Max Planck, for his Nobel Prize address on the origin and development of the quantum theory given before the Royal Swedish Academy of Science, Stockholm, 1920.
Ob. Head of Max Planck. Above, MAX PLANCK, below 1858–1947
Rev. A spread eagle. BUNDESCHREPUBLIK DEUTSCHLAND DEUSCHE MARK
On edge of coin: REICH UND FREIHEIT UND EINIGKEIT

13 MAXIMINUS 235–238 A.C.
Ob. Laureated head to right (Maximinus Pius Aug etc.)
Rev. Salus seated facing left feeding serpent.
19 mm. Silver. Roman.

19 NERO Hierapolis / Phrygia 54–68 A.D.
Ob. Bare head to right.
Rev. Serpent coiled around double axe.
15 mm. Roman.

14 POSTUMUS (ruled in Gaul 258–268 A.D.)
Ob. (Antoninianus). Crowned head to right. Part of shoulder.
Rev. Aesculapius standing with serpent staff. To right omphalos.Salv –
20 mm. Silver.

7 TREBONIANUS GALLUS 251–253 A.D.
Ob. Wreathed head to right.
Rev. Salus standing feeding serpent.
29 mm. Roman.

8 TREBONIANUS GALLUS 251–253 A.D.
Ob. Head to right.
Rev. Bust of Aesculapius to right. In front serpent staff. Struck in Alexandria, Egypt.
22 mm. Roman.

18 VALERIAN 253–259 A.D. Struck at Tios / Bithynia
Ob. Bust to right.
Rev. Aesculapius leaning on serpent staff. Around: TIA – HAH Head of Aesculapius facing right.
24 mm. Roman.

Memoir of DeForest Porter Willard (1884–1957)*

By JESSE T. NICHOLSON, M.D.

AMONG THE notable members of the College of Physicians was the late Dr. DeForest P. Willard. He was a descendant of a distinguished family. His paternal ancestor, Simon Willard, arrived in America in 1634. He was a celebrated Indian fighter and a founder of the town of Concord, Massachusetts. Two of his descendants were Presidents of Harvard College and many others held positions of distinction.

DeForest P. Willard was born in 1884 at 1818 Chestnut Street, Philadelphia. He was the only child of Dr. DeForest Willard and Elizabeth Porter. His father was one of the most prominent physicians at the turn of the century. He led many civic and charitable endeavors. He was the founder of the Department of Orthopaedic Surgery and Professor of that Department at the University of Pennsylvania.

When DeForest P. was eight years old, his father's good friend, Dr. D. Hayes Agnew, died and the Willards moved into his home at 1601 Walnut Street. His education was at the William Penn Charter School and the University of Pennsylvania. He was a member of the Delta Psi Fraternity. He received his B.S. degree in 1905, and his M.D. degree in 1908. Following an internship at the Hospital of the University of Pennsylvania, he became a Fellow at the Mayo Clinic. At his father's death in 1911, he returned to Philadelphia. He then became associated with Dr. Edward Martin in the practice of general surgery for several years.

Orthopaedic surgery gradually claimed his full attention. In 1912, he was appointed Assistant in Orthopaedic Surgery at the Hospital of the University of Pennsylvania and the Philadelphia Orthopaedic Hospital and Infirmary for Nervous Diseases. His Chief at these institutions was Gwilym G. Davis.

In April 1917, Dr. Willard was appointed First Lieutenant in the Medical Reserve Corps of the United States Army. He accompanied Major Joel E. Goldthwaite to England with the first contingent of orthopaedic surgeons to serve with the British Army. On December 12, 1917, as a Captain, he was ordered to France as Orthopaedic Consultant to the 42nd Division of the American Expeditionary Forces. Later, he was transferred, in turn, to the Evacuation Hospital at Toul, the Vichy Hospital Center, and to General Headquarters at Tours. In 1919, he was honorably discharged from the Army as a Major. In 1925, he became a Lieutenant Colonel in the Medical Reserve Corps.

Following World War I, he returned to Philadelphia and resumed the practice of Orthopaedic Surgery. In 1920, he became Vice-Dean and Professor of Orthopaedic Surgery at the Graduate School of Medicine of the University of Pennsylvania; a position he continued to hold until his appointment as Emeritus Professor in 1946.

In addition, Dr. Willard had been Orthopaedic Surgeon to the Philadelphia Orthopaedic Hospital and Infirmary for Nervous Diseases from 1920–1942, to the Graduate Hospital of the University of Pennsylvania from 1920–1951, and to the Philadelphia Shriners Hospital from 1925–1930. He was Consultant Orthopaedist to the Pennsylvania, Bryn Mawr, Chestnut Hill, Abington and Delaware (Wilmington) Hospitals until his retirement in 1951.

It was shortly after the founding of the Orthopaedic Clinic in the Delaware Hospital that Dr. Willard surrendered his "most eligible

* Prepared and published at the request of the Council of the College of Physicians of Philadelphia.

bachelor" status in favor of the Clinic Volunteer, Miss Margaretta Miller, daughter of the Honorable Charles R. Miller, Governor of Delaware, and Mrs. Abigail Woodnutt Miller. The Willards were married in 1926.

In addition to Orthopaedic Clinics, the Willards maintained a lasting interest in fly fishing and golf. Dr. Willard was one of the most skillful and devoted trout fisherman. His interest in this sport carried him each spring, not only to open the season at the Swiftwater Club in the Poconos, but in summer to more remote streams in Maine and Canada. Dr. Willard was a former golf champion at the Merion Golf Club, and in later years, a member of the Gulph Mills Golf Club. He continued golf after his retirement at Sea Island, Georgia. He delighted in telling a remark by a caddy which he overheard as he drove from the first tee, "I bet that old boy used to be good".

His golf did not entirely interfere with his church. He belonged to the Second Presbyterian Church and served as an Elder.

Dr. Willard was a member of the Philadelphia Academy of Surgery (Secretary, 1930–1935); The American Academy of Orthopaedic Surgeons; Société Internationale de Chirurgie Orthopédique et de Traumatologie; The American Surgical Association; The American Orthopaedic Association (he was Secretary of this Association from 1921 to 1931, and President in 1935). He was a Director of the Aid Association of the Philadelphia County Medical Society.

Dr. Willard was a straightforward but conservative teacher. His facts were based upon experience and observation. He instilled conservatism in his students by requiring an evaluation of the anticipated surgical result in relation to the patient's occupation and environment. He was friendly, kind, and exceptionally courteous to patients. He became absorbed in their problems. He continued, without charge, numerous clinic patients in his private office. He frequently gave them financial aid from "a special fund". His consultation fees were modest. These were governed by an admitted sympathy for family hardships. Compliments embarrassed Dr. Willard. This, in turn, made it difficult for him to give direct praise. He never scolded, and his criticisms were so gentle that they frequently escaped his residents and associates. His greatest reprimand, delivered with a wry smile, was "you boob". These characteristics endeared him to colleagues, patients, and friends.

Dr. Willard was devoted to the Graduate Hospital and the Graduate School of Medicine. He did much during his long association with these facilities to advance his surgical specialty and plan for its future development. His many admiring friends made possible a DeForest P. Willard Memorial which will be used for annual awards to orthopaedic students.

Memoir of Chevalier Jackson (1865–1958)*

By LOUIS H. CLERF, M.D.

Chevalier Jackson died August 16, 1958 in Philadelphia, Pa., the scene of his professional labors for forty-two years. Born on November 4, 1865 at Pittsburgh, Pa., Dr. Jackson was graduated from the Jefferson Medical College in 1886.

Having decided to specialize in the field of laryngology he visited the Clinic of Sir Morrell Mackenzie in London and on his return to Pittsburgh became associated with the Department of Laryngology of the Medical School of the University of Pittsburgh. His interest in peroral endoscopy began in 1886 when he visited London, and in 1890, he devised an esophagoscope to remove a denture from the esophagus of an adult. This opened new fields in the treatment of cicatricial stenosis and the diagnosis of other stenosing lesions of the esophagus. After Killian demonstrated that a rigid tube could be passed into the trachea for removal of foreign bodies Dr. Jackson promptly investigated this field. He constructed a practical bronchoscope, developed a technique for its safe passage and devised accessory instruments to meet the increasing needs of this field.

His masterful skill in removing foreign bodies from the air and food passages earned him an international reputation. His desire to prevent foreign body accidents and caustic burns of the esophagus prompted him to dedicate his early life to their prevention and treatment and he devoted all his time, energy and resources to this end.

He accepted the Chair of Laryngology at Jefferson Medical College in 1916 succeeding the late D. Braden Kyle. His skill as a teacher gained him world-wide recognition and he was much sought after by postgraduate medical groups. His ability to illustrate with pastel crayons while giving "chalk talks" aided in clarification and conviction, and his ambidexterity added amazingly. His dedication in spreading the "Gospel of Bronchoscopy" led to acceptance of a Chair in the School of Medicine of the University of Pennsylvania and its Graduate School and the Woman's Medical College of Pennsylvania. In 1930 he relinquished all of these and established a Bronchoscopic Clinic at the Temple University School of Medicine. Personal postgraduate courses given in this country and abroad supplied the increasing demand for bronchoesophagologists in the larger hospitals and teaching centers.

He was meticulous with details and never left anything to chance. On one occasion while preparing for removal of a bronchial foreign body he stated that "he would be greatly distressed if a situation arose which he had not anticipated and not already provided for."

One of Dr. Jackson's greatest contributions to humanity, namely passage of a Federal Caustic Act in 1927, has not been fully appreciated. This demanded an enormous expenditure of time and energy and its passage was due to his initiative and the organization of an active committee of physicians in each of the 48 States of the Union.

Dr. Jackson was a prolific writer and contributed hundreds of articles on peroral endoscopy and laryngeal disease. His first book, entitled "Tracheo-Bronchoscopy, Esophagoscopy and Gastroscopy", appeared in 1907. This contains a detailed description of rigid-tube gastroscopy. He wrote a large number of textbooks, many of which have been translated into several foreign languages and his works have been accepted as Bronchoscopic Bibles. He was a member and Presi-

* Read before the College of Physicians of Philadelphia, 4 November 1959. Prepared and published at the request of the Council of the College of Physicians of Philadelphia.

dent of every National Laryngological Society and was a Founder and the First President of the American Society of Peroral Endoscopists, presently the American Broncho-Esophagological Association. He enjoyed membership in many British, European, South and Central American and Oriental Otolaryngological Societies. He was the first recipient of the deRoaldes Award given by the American Laryngological Association in 1926. The Philadelphia Bok Award and the Strittmatter Award were given him in 1927. He was decorated by the Governments of France, Belgium, Italy and Brazil. Honorary degrees were received from many academic institutions. He was the recipient of the 1940 Distinguished Service Medal of the American Medical Association, and was awarded the Bigelow, Cresson and Kiwanis medals and the gold medal of the Radiological Society of North America.

Unlike many physicians he had many avocations and these often complemented his medical work. An artist of no mean ability, who did etchings and worked with all media, he frequently reproduced endoscopic views in color to illustrate medical articles; he also provided his friends with pastel-shaded scenes conveying Christmas greetings. His ability as a woodworker provided a number of medical societies with gavels made of distinctive wood. An interest in machine work aided in devising innumerable instruments to solve mechanical problems in foreign body removal.

Dr. Jackson enjoyed an unique position in the medical profession of America. Few physicians have left behind so many monuments to their skill. He created a new specialty in medicine, perfected an instrumentarium and technic for its practice, taught the need for its use in diagnosis and treatment, and because of his knowledge and skill became the Master of his Art.

Dr. Jackson is survived by his son, Dr. Chevalier Lawrence Jackson, presently Professor of Laryngology and Bronchoesophagology at the Temple University School of Medicine.

Memoir of Adolph J. Creskoff (1908–1959)*

By THOMAS FITZ-HUGH, JR., M.D.

Adolph J. Creskoff, one of the five sons of Louis E. and Matilda L. Creskoff, was born in Philadelphia May 27, 1908. The members of this warm-hearted devoted family have set fine records of distinguished citizenship, not the least of which was Adolph's. Like many another successful Philadelphian he received his preparatory education in the Central High School, from which he graduated in 1926. He received his A.B. degree four years later from the University of Pennsylvania, and his M.D. from the University of Pennsylvania in 1934. His internship was served at the Harrisburg Hospital in 1934 and 1935. While there he met his wife-to-be, Barbara Maxwell, whom he married in 1938. Their daughter, Anne Louise, (1940) completed the little family circle to which Adolph Creskoff was deeply devoted.

His professional career began with an appointment as Assistant in Research Surgery in the University of Pennsylvania School of Medicine (1935 to 1938), and with a volunteer Assistantship in the struggling young Hematology Section of the Medical Clinic of the Hospital of the University of Pennsylvania (1936). To the science and art of Clinical Hematology he then devoted his professional life, and finally in 1955 he became Chief of the Hematology Section which he had so loyally and constructively served over the preceding twenty years.

He was appointed Instructor in Medicine in 1941, Associate in 1947, Assistant Professor of Clinical Medicine in 1948, and Associate Professor in 1952. In addition to his Chiefship of the Hematology Section, University Hospital, he was Consultant in Hematology to the Veterans Administration Hospital, the Delaware County Hospital, and the A. C. Milliken Hospital.

His honorary and professional society memberships include Phi Beta Kappa, Alpha Omega Alpha, Sigma Xi, the John Morgan Society, the College of Physicians of Philadelphia, the American Federation of Clinical Research, and the Hematological Society of Philadelphia.

Dr. Creskoff contributed a number of excellent articles to the Hematological Literature and carried out much original research, some of which was never published. He was an able and devoted teacher and lecturer in his chosen field, and to the practice of Internal Medicine he brought unusual diagnostic acumen, thoroughness, deep human sympathy, and a genial optimism which altogether served to endear him to patients, colleagues, and students alike.

His hobbies were trout and surf fishing, photography—in which field he was a most skilful devotee—and collecting medical cartoons which he began to accumulate and classify and enjoy years ago.

He suffered his first attack of coronary artery occlusion while lecturing to students on April 12, 1958. He was able, after several months, to return to part-time duty, but was again stricken suddenly and fatally on the night of January 22, 1959.

We mourn the loss of this sweet-natured, able, genial, devoted physician, colleague, teacher, and friend. He kept the Faith.

* Prepared and published at the request of the Council of the College of Physicians of Philadelphia.

Memoir of George Wilson (1888–1959)*

By CHARLES C. WOLFERTH, M.D.

Dr. George Wilson, a Fellow of the College since 1921, was born at Erie, Pennsylvania on December 3, 1888, and died at his home in Penn Valley, March 23, 1959. He was married in 1910 to Elsie M. Pardee of New Harmony, Indiana, who with three children, Mrs. George C. Davies, Mrs. William C. Deemer and Dr. William W. Wilson and eight grandchildren survive him. The younger Dr. Wilson, also a neuropsychiatrist, was associated with him in practice.

He was graduated from Erie High School in 1906, studied biology at the University of Pennsylvania the following year, then entered its School of Medicine from which he was graduated in 1911.

His association with the Philadelphia General Hospital which lasted throughout the remainder of his life began with internship in 1911. He served as assistant Physician for eight years on the Service of A. A. Stevens and then as Physician to the Psychiatric Department for four years. In neurology, prior to his long notable Service as chief, which began in 1926, he had been assistant to William G. Spiller. He also served for more than 10 years as office assistant to Charles K. Mills, who greatly influenced his thinking and his career.

He was commissioned in the Medical Reserve Corps in July 1916 and beginning December 14, 1917, served in France in World War 1, successively as Neurologist to Base Hospital #34 (organized by the Episcopal Hospital of Philadelphia), Psychiatrist to Base Hospital #214 and Psychiatrist to the 78th Division. He was released from military Service, January 13, 1919.

His devotion to the Philadelphia General Hospital where he remained as Chief and Active Consultant in Neurology never wavered, but he became associated with many other institutions. He was Neuropsychiatrist to the Bryn Mawr and Abington Memorial Hospitals and to the U. S. Public Health Service; Neurological Consultant to the U. S. Veterans Hospital; Visiting Consultant to the Pennsylvania Epileptic Hospital and Colony Farm; formerly Neurologist to the Episcopal Hospital; Consulting Neurologist to nine other Hospitals in Philadelphia and vicinity. He organized Fairmont Farm, was largely responsible for its development and was its President from 1926 until his death. He also initiated 133 South 36th Street Corporation and remained its President for many years.

He had been Professor of Clinical Neurology in the School of Medicine of the University of Pennsylvania 1929–1942 and Clinical Professor of Neurology in the Woman's Medical College of Pennsylvania 1925–1939. He wrote the Section of Neurology in Musser's Medicine and about sixty papers, mostly on neurological subjects, many of them with collaborators. He was a member of many medical societies, a former President of both the Philadelphia Neurological Society and the American Neurological Association, the latter in 1948.

He was a member of the Merion and Pine Valley Golf Clubs, the Doctors Golf Association of which he had been Secretary and chief moving spirit for many years, the Midday Club of Philadelphia and the Islamorada Fishing Club of Florida.

The fact that George Wilson was chosen for so many responsible positions reflects something of the esteem in which he was held. He was widely recognized as an extraordinarily capable neuropsychiatrist, a gifted clinical teacher and an expert in the medico-legal aspects of neuropsychiatry. He believed

* Read before the College of Physicians of Philadelphia, 2 December 1959. Prepared and published at the request of the Council of the College of Physicians of Philadelphia.

strongly in the great importance of neurology and frequently emphasized that view. On one occasion, more than 30 years ago, distressed by the lack of knowledge of neurology exhibited by some of his internist and pediatrist friends, he volunteered to remedy some of their defects by a series of Saturday afternoon clinics at the Philadelphia General Hospital. His offer was accepted and there ensued what must have been one of the most brilliant series of didactic neurological clinics ever presented in that historic institution. At least that is what his pupils thought. By this action he not only demonstrated his conviction as to the importance of neurology and his skill as a teacher, but he provided a sample of the boundless generosity, exhibited in so many ways throughout his life that helped to make him beloved by so many people.

He believed that neurology and psychiatry belong together, at least in practice. To separate them, he said, would be like having one set of cardiologists dealing solely with structural heart disease and another set limiting themselves to disturbances in function. This view is still highly controversial and the analogy is no longer persuasive because we are already developing a group of sub-sub-specialties within the sub-specialty of cardiology. It is clear, however, that he had little sympathy with movements that tend to separate psychiatry from medical science.

George Wilson possessed a relentlessly logical, active, one might almost say restless mind and a retentive accurate memory. He was a man of broad cultural interests with special emphasis upon literature, American history and the biographies of those who helped make it. He was interested in various sports and became as good a golfer as a physician has right to be. He was genuinely fond of most people with whom he came in contact, tolerant of their faults and weaknesses, liked to indulge in the give and take of repartee liberally spiced with his delightful sense of humor. He was a much sought after guest at social functions. Where he sat was apt to be the head of the table. The functions at which he and Mrs. Wilson entertained were occasions that the fortunate guests liked to remember. George Wilson brought many people together and was the catalyst of numerous valued friendships not only among physicians but others as well. This by-product of his own friendships was a kindly service for which many of his friends will ever be grateful. But most grateful of all are patients restored to health, to a useful life or at least to the ability to live with their afflictions, by his wisdom and knowledge.

The Fellows of this great College may well have pride in the memory of George Wilson. He possessed in generous measure the qualities which we hope will be found or will be developed in young people chosen for Fellowship.

Memoir of Isaac Sharpless (1911–1959)*

By ORVILLE HORWITZ, M.D.

Dr. Isaac Sharpless, known as 'Ike' to his friends and patients, was born in Rosemont, Pennsylvania on September 18, 1911, attended the Westtown School, then joined the U. S. Merchant Marine before attending Hamilton College where he graduated in 1936. He was graduated from the Medical School of the University of Pennsylvania in 1940, interned at the Pennsylvania Hospital and was later resident at the Bryn Mawr Hospital where he was to be on the visiting staff. He died after a brief illness on April 27, 1959.

Ike did not become a physician to improve his position in the community, to make money, to become the head of a hospital staff, or to solve an obscure biochemical problem. Yet at his funeral many of his friends and patients stood outside the doors of the Haverford Friends Meeting House because there was no standing room inside. These same friends and patients contributed $30,000 to a memorial to him at the Bryn Mawr Hospital. This, of course, would have pleased him, but the driving interest of his life was to serve, and to enjoy the companionship of, his fellow man. He was blessed by heredity, splendidly trained, enriched by an outstanding personality, and endowed by the four greatest qualities a physician should have: fearlessness, humility, humor and understanding.

Since the important part of his life was his relationships with other people I have written to certain of his colleagues and patients for their impressions of him at various times of his life. I shall quote liberally from letters received from Doctors William U. McClenahan, John L. McClenahan, J. K. Clark, W. F. Kammer, and others.

From Dr. John McClenahan's letter: "My chief recollection of Ike as a medical student and intern was his wonderful way of generating warmth and affection in those around him, an achievement he carried off steadily and without clamor. I remember his high and gentle lustre rather than his brilliance. He was sufficient but never detached, and those who came his way all seemed to love him. It was a taxing experience to follow him on any service, for every patient seemed to be looking the other way. He had an instinctive ability to examine and treat the patient and, at the same time, to be the patient. Even during his early years of training his admirers had begun to draw together in a cheerful procession of patrolmen, hockey players, tarts, professors, turf-fanciers, registered nurses, embalmers, librarians and authentic Lombard Street bloodletters who would drift into the Emergency Ward for refreshment and repair. They preferred his care, for the men and women he attended always seemed to recognize their good fortune and feel themselves particularly blessed".

Dr. John Kapp Clark writes of his medical school days as follows: "He was well liked by everybody. He was one of the few people I have ever known who had absolutely no enemies and at the same time he was a strong, determined personality. He managed to get away with this, I think, by virtue of his tremendous sincerity and the feeling he gave other people that they were important and that he was interested in what they were saying. We both landed together at Carlisle in the Army in December 1943, and Ike managed to take this pretty much in his stride. From Carlisle he went down to New Orleans and he and Cacky settled into the wartime life of the town, and made so many friends that at one point Ike had more or less decided that he would settle in New Orleans for the rest of his life".

Of all his great achievements in human rela-

* Read before the College of Physicians of Philadelphia, 2 December 1959. Prepared and published at the request of the Council of the College of Physicians of Philadelphia.

tionships his most important one was in marrying Catharine Dutilh Smith on October 17, 1942. She was as important a part of Ike's life and practice as any good doctor's wife could possibly be.

During World War II he was a member of the medical corps, U.S. Army. Concerning his military experiences I quote from his friend and commanding officer Dr. W. F. Kammer: "I first learned to know Ike at Camp Kilmer in September 1944. I was Acting Chief of Medicine for the unit. I am sure you have had occasion to experience the finding of a friend that turned an unpleasant circumstance into one that was not only less unpleasant, but actually turned out to be a real highlight. Ike turned out to be just such an individual. He fitted into the organization like a glove. We landed at Omaha Beach and were hauled back into an open field, only to find that our equipment had been sent to Africa. It was then that I learned that doctors were not particularly good campers or do-withouters. As you know, that part of France is the only place in the world where there are whitecaps on the mud when the wind is blowing from the channel. The morale was poor. It was then that I realized that Ike was an unusual chap. We agreed to explore the Cherbourg Peninsula on a day to day basis. Not having any transportation, we hitchiked over the entire area, visited most of the famous battle areas and mooched food wherever we could. Ike had a working knowledge of the French language, and I, having already been in the Army 3 years, had a little rank and enough-know-how of the military to keep us out of trouble. We both boasted an insatiable lust for travel—thus the combination was perfect. By approximately the end of October of 1944 we helped complete a thousand bed tented general hospital. We were soon at work practicing medicine under far from perfect circumstances. Ike was in charge of a medical ward. He quickly won the hearts of all his patients, while at the same time proving himself a capable physician. Ike's keen sense of humor seemed to crash through just when we all needed it".

After the war Dr. Sharpless took over his father's practice in Rosemont, Pennsylvania. It was a large and very active general practice. Aside from curing people's physical ailments he also shielded them from other possibly greater calamities, keeping them out of hospitals, insane asylums, divorce courts, and even jails.

Quoting from one of his patients: "He was a shy man. Words did not come easily to him. But how he could listen! He not only heard, he absorbed and he understood. His integrity in all of his dealings was complete. Added to this was his complete dedication to his profession. If he knew he was needed he would come at any hour and stay as long as necessary".

Among his many facets was a keen interest in sports, particularly hockey. He was the doctor for the Philadelphia Ramblers Hockey Team. He was perhaps the best team physician any athletic organization ever had. He knew the players intimately, visited many of them at their homes in Canada, was an enthusiastic rooter at all the games, and on one occasion actually boarded the wife of one of the Ramblers while the player was in the hospital. Ike himself was a hockey player when he was in college. He was an ardent and accomplished bird watcher, and an enthusiastic golfer.

He was the physician for Bryn Mawr College and the Shipley School for Girls. Concerning the latter activity, Miss Margaret Bailey Speer, Headmistress of the Shipley School, wrote as follows: "When we needed him he always came —immediately, cheerfully and reassuringly. If it was a crisis, he stayed, doing more than anyone could have asked or expected. If it was a false alarm, he took it cheerfully as part of the day's work. If there was serious illness he brought healing, partly by his scientific knowledge and careful skill, and partly by the very strength of his own wholeness, his laughter, and good sense." The true physician has to do much more than diagnose and treat illness. He has to help people in all stages of perplexity: perplexity about illness, about their families, their friends, their futures. All of us who have turned to Ike remember how he has given us

such support: his quiet way of listening without interrupting but with a probing question now and then; his tentative suggestions as he felt for the most helpful course—never offering a slick solution or impossible advice; his final brisk, common-sensical, encouraging admonitions. We have all probably used the word 'tireless' or even 'untiring'—these suggest that somehow he didn't get tired—as ordinary mortals would—no matter how much we asked of him. It would be truer to say that no matter how tired he was he kept on doing what was needed".

In December 1957 the Blue Cross was being attacked in the press by certain members of the Philadelphia County Medical Society. There was a strong feeling among many physicians that the attack was unjust. Dr. William U. McClenahan and Dr. Sharpless were asked to organize a meeting and invite a representative group of Philadelphia physicians to discuss the problem. The main speaker was Dr. I. S. Ravdin who was extremely clear and convincing. The new president of the County Medical Society then promised his cooperation. Quoting from Dr. McClenahan: "My job was merely introducing, and good old Ike—true to form—just smiled and thanked our guests for their attendance. What good the meeting did to the Blue Cross cause is still an unanswered question in my mind. Just like all the pills I dispense—I wonder who benefits besides the druggist and my family, who are dependent upon me for economic support. Certainly Ike and I realized we were chosen because we could start a dignified revolution without suffering from subsequent professional persecution as we were members of the rapidly diminishing group of general practitioners. Whatever may be said about the wisdom or result of our venture I shall always boast in years to come of the fact that in the Battle of the Blue Cross in Philadelphia in January, 1958, I fought next to Ike Sharpless".

A recent quote from another of his fellow army officers follows: "It hardly seems possible that this man who enjoyed life so much and saw something pleasant and humorous in every situation could be gone. I knew Ike to be a warm and generous individual who gave of himself without thoughts of the energy expended or of possible gain to himself".

My personal contact with Ike started when he reported to me, his resident, to start his internship in 1940. He said he'd need a lot of help. He needed less help than any intern I ever saw, because he always knew just where he needed help and his natural inclination led him to a vast knowledge of the physical and personal needs of each and every one of his patients, who were almost always more than anxious to cooperate with him. As far as I could see, he simply never had any "uncooperative" patients. I'm sure that a lot of the people whom he treated improved because they thought that it was so important to Ike. They were right. It was.

A person who was close to Ike said to me shortly after his death: "I've lost my best friend". Many people, I'm sure, had this same sentiment. And they were right. They had.

If Shakespeare had been one of his patients, he might have said: "Here was a physician! When comes such another?"

Memoir of Joseph J. Toland Jr., M.D., (1887–1959)*

By JAMES F. O'NEILL, M.D.

Joseph J. Toland, Jr., was born in Frankford, Philadelphia, Pa., on September 29, 1887, the oldest son of Joseph James and Elizabeth (Briggs) Toland. His early education was received in the Philadelphia Public Schools, and he graduated from Central High School in 1906. Following a two-year course at the Frankford School of Business and Shorthand, he entered the Medico-Chirurgical College of Philadelphia, from which institution he received his M.D. degree in 1912.

Dr. Toland served his internship at Frankford Hospital, Philadelphia, 1912–1913, and remained on that staff in surgery as an associate of Dr. Charles Nassau until 1923.

On June 21, 1915, he married Marie Schlater. They had three sons: Joseph J., III, M.D., Francis (who died in childhood), and Paul R. Mrs. Toland expired in June, 1921. In July, 1923, he married Edith R. Bault, who survives him. On June 13, 1917, he enlisted in the United States Navy as an assistant surgeon with the Commission of Lieutenant (jg.). He was discharged on July 23, 1919, with the rank of Lieutenant Commander, and was subsequently active for some years in the Naval Reserve.

From 1920–1924 he was examining physician for the Department of the Interior, and from 1932 to 1940 served as Consultant in Surgery to the United States Naval Hospital in Philadelphia.

For many years he was Medical Director, a member of the Board of Directors and a Chief in Surgery at the Northeastern Hospital in Philadelphia. Dr. Toland was also Surgical Consultant to the Philadelphia State Hospital.

He was Chief in Surgery and Gynecology at St. Mary's Hospital in Philadelphia for many years, leaving that institution in 1940 to assume duties as Medical Director at the newly-opened Nazareth Hospital in Philadelphia, where he was also Chief of a Surgical Service for almost two decades until disabled by his terminal illness. His colleagues at Nazareth honored him in 1953 by establishing, in his name, a lectureship, which has been held annually since that year.

He was a member of the Philadelphia County Medical Society, and served as Chairman of its Legislative Committee. He was a member of the Pennsylvania State Medical Society, the American Medical Association, a Fellow of the American College of Surgeons and the International College of Surgeons, and an Honorary member of the Gesellschaft der Aerzte, Vienna. He was elected to Fellowship in the College of Physicians of Philadelphia on October 3, 1945.

Dr. Toland was always active in civic affairs in Frankford. He was the first Commander of the Frankford Post, 211, American Legion; Past Grand Knight, Isabella Council, and a member of the Archbishop Ryan General Assembly, Fourth Degree, Knights of Columbus; Trustee of Frankford Memorial Stadium; Captain, Laymen's Retreat League of Malvern; Member of the Board of Directors of the Northeast National Bank, and when that Company was purchased by the First Pennsylvania Banking and Trust Company, he remained a member of the Board of Directors of the latter institution.

For some years he was a member of the Board of Directors of the Federation of Catholic Physicians' Guilds of the United States and Canada, an organization which elected him its President in 1955, and desig-

* Prepared and published at the request of the Council of the College of Physicians of Philadelphia.

nated him as Catholic Physician of the Year in 1958.

Dr. Toland was Chairman of the Scholarship Fund of Medico-Chirurgical College of Philadelphia, and received from that alumni group their Award of Merit in 1959.

In that same year, LaSalle College of Philadelphia bestowed on him its Signum Fidei Medal. In 1945, he established a Scholarship bearing his name at Villanova University, and was the recipient of a Honorary Degree of Doctor of Humane Letters from that institution in 1955.

He founded the Men of Medical Missions, an organization dedicated to assisting the Medical Mission Sisters of Philadelphia.

Dr. Toland had a cheerful and dynamic personality and, in addition to spending much time and energy in professional, civic and religious work, he contributed regularly to the medical literature. He took great pleasure each summer in spending a few weeks engaged in his favorite sport of fishing in Maine. He remained quite active in all his interests until disabled by cerebral vascular thrombosis, which progressed rapidly over a period of several days and caused his death on October 19, 1959.

Report of The Treasurer For The Year Ended November 10, 1959

Assets

General Fund			
Cash in bank and on hand			$14,441.85
Maintenance and Reserve Fund			
Cash in bank		$609.96	
Investments		11,287.76	11,897.72
Miscellaneous Contributions Fund			
Cash in bank			4,583.00
Library Historical Collections Fund			
Cash in bank (restricted)			9,325.17
Trust Funds			
Uninvested principal cash		5,495.88	
Uninvested income cash (restricted)		29,575.58	
Loan receivable—garage equipment		611.24	
Mortgage		42,750.00	
Real estate		162,746.10	
Bonds		317,945.90	
Preferred stocks		277,374.71	
Common stocks		358,329.96	1,194,829.37
Plant Fund			
Land—15–25 South Twenty-Second Street		95,000.00	
Building		1,420,747.93	
Furniture and fixtures		1.00	
Deposits on perpetual fire insurance policies		11,462.28	1,527,211.21
Total			$2,762,288.32

Funds

General Fund			
Library general account		$14,146.02	
Life membership account—Uninvested portion		482.00	
Reserve for contingencies—Uninvested portion		190.02	
Unexpended operating fund balances			
Current operations	$(1,262.45)		
President's room	525.00		
Friends of library	20.00		
Books	20.33		
Rare books	152.96		
Campaign expense	155.95		
Portrait	126.47		
Entertainment	87.73		
Harvey's "De Motu Cordis" Facsimile 1628 Edition—overexpended	(202.18)	(376.19)	$14,441.85
Maintenance and Reserve Fund			
Principal net worth			11,897.72
Miscellaneous Contributions Fund			
Principal net worth			4,583.00
Library Historical Collections Fund			
Principal net worth			9,325.17

Trust Funds			
Principal net worth			
Discretionary common trust fund	1,083,464.79		
Legal common trust fund	24,097.94		
Trust funds not pooled	14,941.06		
Fund for purchase of units in Discretionary common trust fund	42,750.00	1,165,253.79	
Income net worth			
Discretionary common trust fund	27,821.57		
Legal common trust fund	682.99		
Trust funds not pooled	1,071.02	29,575.58	1,194,829.37
Plant Fund			
Principal net worth			1,527,211.21
Total			$2,762,288.32

General Fund

Statement of Receipts and Disbursements

November 11, 1958 to November 10, 1959

Receipts				
Income on investments, net of agent's fees				
Trust funds		$70,340.65		
Less: Amount transferred to income cash of the several restricted trust funds	$9,604.87			
Erlanger garage expenses paid	7,196.86			
Amount retained in income cash to cover anticipated additional expenses of the Erlanger garage	1,881.59			
Amount transferred to uninvested principal cash of the Discretionary Common Trust Fund	44.35	18,727.67	$51,612.98	
Income funds, principal of which is not administered by the College of Physicians of Philadelphia			1,220.01	
Interest on mortgage			1,987.02	$54,820.01
Contributions				
Fellows dues			58,247.50	
Life membership			1,133.00	
Entrance contributions			3,385.00	
Use of halls and projector			2,676.00	
Other			200.00	65,641.50
Library				75,109.48
Miscellaneous				1,938.69
Total receipts				197,509.68
Disbursements				
Operating expenses				
Hall committee			31,814.69	
Office of the Secretary			8,182.00	
Office of the Treasurer			9,420.99	
Pensions			3,400.00	
Campaign expense			10.00	
Publication committee			5,280.51	
Books			2,240.75	
Entertainment committee			1,131.43	
College collections committee			3,560.57	65,040.94

Library		
Salaries	$97,153.09	
Books, journals, supplies, etc.	28,890.93	$126,044.02
Entrance contributions transferred to purchase units in the Discretionary Common Trust Fund		3,385.00
Total disbursements		194,469.96
Excess of receipts over disbursements, current year		3,039.72
Add: Cash balance, General Fund, November 10, 1958		11,402.13
Cash balance, General Fund, November 10, 1959		$14,441.85

NOTES: Receipts for the year ended November 10, 1959, of special purpose funds from contributions and security investments not included in the above schedule were as follows:

Fund	Amount
Maintenance and reserve fund	$396.49
Fund for purchase of units in Discretionary Common Trust Fund	2,250.00
Miscellaneous contributions fund	624.26
General endowment fund	1,337.50
Library historical collections fund	7,000.00
Book of remembrance	467.35
College extension fund	352.50
Arthur Parker Hitchens lecture fund	5,000.00

ANNUAL SUMMARY STATEMENT

ENDOWMENT AND EXTENSION FUNDS OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA

STATEMENT OF COST OF INVESTMENT UNITS PURCHASED IN THE DISCRETIONARY COMMON TRUST FUND

By the General Endowment Fund

November 12, 1958 to November 11, 1959

Balance, November 12, 1958		$356,556.83
Receipts		
Entrance contributions	$3,385.00	
Gifts from Fellows (Voluntary contributions)	1,337.50	
Gift (Note 1)	35,000.00	
Gifts from Book of Remembrance	467.35	
Amortization of mortgage—13th and Locust Streets	2,250.00	
Amortization of loan—garage equipment	324.00	
	42,763.85	
Add: Net addition, current year, from the unit adjustment account	4.44	42,768.29
Balance, November 11, 1959		$399,325.12

NOTES: (1) Gift was received from the Estate of John E. Hume, M.D.

STATEMENT OF COST OF INVESTMENT UNITS PURCHASED IN THE VARIOUS TRUST FUNDS

By the Restricted Endowment Funds

November 12, 1958 to November 11, 1959

Discretionary Common Trust Fund		
Balance, November 12, 1958		$579,047.96
Receipts		
James E. Talley Book Fund	$1,000.00	
Life Membership Fund	646.19	
Pension Reserve Fund	748.93	
Arthur Parker Hitchens Memorial Lecture Fund	5,000.00	
From unit adjustment account	16.59	
	7,411.71	
Less: Amounts insufficient to purchase one unit credited to the unit adjustment account	29.16	7,382.55
Balance, November 11, 1959		586,430.51
Legal Common Trust Fund		
Balance, November 12, 1958 (no change during the year)		23,500.00
Trust Funds not Pooled		
Balance, November 12, 1958 (no change during the year)		14,941.06
Total Restricted Endowment Funds, November 11, 1959		$624,871.57

STATEMENT OF COST OF INVESTMENT UNITS PURCHASED IN THE DISCRETIONARY COMMON TRUST FUND

By the College Extension Fund

November 12, 1958 to November 11, 1959

Balance, November 12, 1958		$1,583.14
Receipts		
Gifts from Fellows (Voluntary contributions)	$352.50	
Income earned on invested principal	75.82	
From unit adjustment account	16.59	
	444.91	
Less: Amount insufficient to purchase one unit credited to the unit adjustment account	13.57	431.34
Balance, November 11, 1959		$2,014.48
Total Funds at book value, November 11, 1959		$1,026,211.17

JACOB H. VASTINE, 2nd, M.D.
Treasurer

Annual Report on the Library*

ADMINISTRATIVE

Library support. The relationship of the College of Physicians of Philadelphia Library to the larger medical community has been undergoing a fundamental change in recent years. A more widespread recognition of the mutual interdependence of medical research within the area and a regional center for bibliographic literature and services is evolving.

From the beginning, the motto *Non sibi sed toti* has declared the recognition on the part of the College that its library and related activities are intended for the benefit of all and not solely for its own members. Now economic and research conditions have changed so radically since the second World War that the costs of properly maintaining and developing a modern medical research library with regional responsibilities have exceeded the capacity for support by a relatively small group such as the Fellows of the College. The College and the larger medical community of which it is a part now recognize the fact that the base of financial support for the College library must be broadened if the library is to continue to fulfill its logical mission in modern medical research.

Contribution plan. The first step in the widening of the base of the library's support was taken in July 1948. With the encouragement of the commercial organizations who were cognizant of the library's difficulties, a contribution plan was initiated which continued to make the vast resources of the library freely accessible to any one wishing to use them on the premises. Interlibrary loans to non-profit organizations were unaffected by the plan. Contribution schedules were established for commercial organizations and for individuals not in certain groups of borrowers still receiving free borrowing privileges.

This sharing of the library's expenses by the actual users who want the privilege of withdrawing material from the library was readily accepted by those who understood the needs of the library. Although this source of revenue has never exceeded ten percent of the library's budget, it has contributed materially to offsetting part of the cost increases which accompanied the inflationary fifties.

Voluntary support. On the eve of the sixties the spiral is again threatening the ability of the library to sustain minimal service levels. Several years ago substantial voluntary contributions were received from the five Philadelphia medical schools. A year ago and again this year the College invited other non-profit organizations to share in the expense of operating this research machine.

The response of local and even somewhat remote institutions has been most encouraging. The invitation which was issued near the end of the current fiscal year stimulated nine contributions totalling more than $1,000.00. There also appears to be general agreement on the part of the deans of the local medical schools that some regularized support of the College of Physicians Library is a desirable action.

Foundation grants. Appropriations from the Smith, Kline & French Foundation and the Eberhard Foundation were received for special purposes which will increase the usefulness of the library. This assistance will enable the library to modernize the photoreproduction service and other equipment and help it to meet the mushrooming cost of an important abstracting service.

Future support. The College continues to give recipients of government and foundation grants access to the medical literature without itself receiving any federal support. The more government money that comes into the area, the heavier are the demands being made upon the only library in the community which serves as an unofficial regional depository of medical research literature and as a documentation center. As was indicated in the President's

* 1 November 1958–31 October 1959.

address last year there is no opportunity for government support of research libraries at the present.

Another logical reservoir of aid is the membership of the nearby county medical societies. Physicians who are constantly called upon to support a variety of community causes not intimately associated with medicine may learn to their dismay that a major resource in the field of their own professional calling is economically undernourished.

Q. E. D. If the independent learned society library is to survive in its present form, then a broader base of support must be found than exists at the present time. There does not now appear to be another local institution which could take over this library's responsibilities and functions in the event that the College could not secure adequate support. Some observers are not convinced that the survival of this type of medical library is desirable. However, it is the opinion of the present library administration that the future dependence of this community upon a single medical school or upon a paternalistic government library in Washington would be to the detriment of medical progress in the Philadelphia area.

It is to be hoped that advances in the fifties will inspire the medical community to encourage increased vitality and usefulness in the sixties.

The College Library in 1958/59

Serials shift. The analysis of the statistical study of the circulation of serials described in last year's annual report suggested the advisability of making changes in the arrangement of journals in the current periodicals room. The shelf space in this reading room provides for the display of only about one third of the more than 2,200 journals currently being received by the College library. Previous policy has been to select representative serials of the various geographical regions from which journals emanate as well as examples of the many subject specialties and subspecialties regardless of the actual number of calls for the titles. The advantages of the exhibition approach were somewhat offset by the absence from the shelves of some of the more popular journals which browsers would like to examine. The "representative" selection has been replaced by those titles which seem to be in the greatest demand according to the survey.

As might have been suspected the percentage of foreign language material in the Periodicals Room was reduced by this manoeuvre. Because of this reduction it no longer seemed desirable to maintain separate shelving sections for foreign language titles and English language journals. This change also eliminated the dilemma of proper location for polyglot journals and English language journals published abroad.

This rationale led to the filing of all of the journals in one alphabetical arrangement by title regardless of language, as contrasted with the former practice of shelving foreign language material in a separate sequence.

The new selection criterion provided some surprises for members of the Serials Department staff. All of the often maligned state journals gained places in the reading room. There is a heavy representation of pre-clinical material in the reading room location despite the belief that the library's clientele is primarily interested in specialty research. The growth of interest in clinical chemistry and biochemistry is reflected by an increase in the number of journals in those fields now in the Periodicals Room. The library collects sparingly in the field of tropical medicine but five journals in that field won open shelf display distinction. The representation of the Italian journals which are one of the library's traditional strengths was diminished considerably by the rearrangement. Our skepticism about the amount of interest in Slavic language material was shaken by the number of "iron-curtain" journals appearing fairly high on the list of candidates.

These trends, if such they be, are illustrated by the following titles which are now shelved in the Periodicals Room for the first time; *Casopis Lekaru Ceskych*, *Chinese Medical Journal*, *Klinicheskaya Meditsina*, *Polski*

Tygodnik Lekarski, International Journal of Leprosy, Annals of Tropical Medicine and Parasitology, and *Transactions of the Royal Society of Tropical Medicine and Hygiene.*

New Order Forms. The adoption of new multiple copy circulation forms last year was such a time saver that similar forms were introduced into the book order routines this year. These new multi-copy order forms enable the Order Librarian to prepare book orders, library card orders, and temporary cards with a single typing.

Freshman tours. In continuation of the custom of previous years, the library had the opportunity of welcoming the Freshman medical students from the Woman's Medical College, Hahnemann Medical College, and Temple University School of Medicine. Following brief talks on the history and function of the College library, these students were escorted through the different areas of the library. It is hoped that these future physicians will gain an understanding of the resources which are available at the College and that they will be convinced of the desire of the College staff to have these resources used to the fullest extent.

Library chairs. The general appearance and creature comfort of the Reading Room were improved by the installation of new chairs at the tables. This increase in attractiveness was made possible through a fund obtained by T. Grier Miller, M.D.

Philadelphia Society of Medical Assistants. The Librarian and the Curator of the Library's Historical Collections cooperated with other members of the College staff to provide a program for a meeting of the Philadelphia Society of Medical Assistants. The members of the society inspected the various departments of the College following brief talks by members of the College staff.

Personnel

Miss Dolores Pagano was appointed to the newly created position of Library Secretary. This addition to the library staff permits the centralization of stenographic operations which were previously performed in various departments.

Miss Mildred Gray became the Cataloging Assistant following the resignation of Miss Zena Babych who has turned her attentions to homemaking. Two members of the present paging staff, Philip Ballinghoff and Daniel Cavanaugh, have been appointed during the current report year.

Professional Staff Activity. The participation of library staff members in the Medical Library Association includes Miss Muriel Hodge's service as Placement Advisor and Mr. Morse's position on the Board of Directors.

Miss Muriel Hodge capably carried out the demanding responsibilities of the Meals Chairmanship at the Special Libraries Association convention which was held in Atlantic City during the summer.

Mrs. Elnora Smith participated in the annual Philadelphia Catholic Author program. Her talk at the meeting described the inter-library loan services of the College of Physicians Library.

Miss Joyce B. Cushmore was Chairman of the Program Committee of the Philadelphia Regional Group of the Medical Library Association.

Three members of the staff are taking a course in medical librarianship being offered by Drexel Institute of Technology. This course is offered to meet the requirements of the Medical Library Association for certification. Classes in this course are being held in the College of Physicians building and the library collections are proving most helpful to the local librarians who have enrolled.

The Librarian presented two lectures on sources of information in the medical literature to classes in the Graduate School of Medicine.

The library was represented at the annual meeting of the Medical Library Association, which was held in Toronto, by Miss Muriel Hodge, Mrs. Elnora Smith, Miss Muriel Zeldis and Mr. Elliott H. Morse. Mr. Morse served as moderator during a panel discussion

program on the future of the medical society library.

Mr. McDaniel's activities are recorded in the historical section of this report.

Benefactors. A list of the donors of books and other library materials appears in the statistical section of this report.

The library is pleased to be able to report the following institutional subscriptions to the support of the library made under the terms of the Contribution Plan:

NON-PROFIT INSTITUTIONS

Harrisburg Hospital
Devereux Foundation
Bryn Mawr Hospital Medical Staff
Institute for Cancer Research
Woman's Medical College
University of Pittsburgh

COMMERCIAL INSTITUTIONS

Air-Shields, Inc.
J. T. Baker Chemical Co.
Barnes, Dechert, Price, Myers & Rhoads
Bernstein & Bernstein
Borden Company—Chemical Division
Cohen, Ornsteen & Beasley
Colgate Biological Laboratories
Dentists' Supply Co.
Dilworth, Paxson, Kalish, Kohn & Dilks
E. I. du Pont de Nemours, Haskell Laboratory
E. I. du Pont de Nemours, Lavoisier Laboratory
E. I. du Pont de Nemours, Stine Laboratory
S. F. Durst & Co.
Eaton Laboratories
Jerome Edelman
Freedman, Landy & Lorry
General Atronics Corp.
General Electric Co., Missiles & Ordnance Systems Dept.
Gray & Rogers
Halbert & Kanter
Harvey & Thomas
Kontes Glass Co.
La Wall & Harrison
Lee Ramsdell & Co.
Lewis & Gilman, Inc.
Lincoln Foundation
MacAndrews & Forbes Company
McNeil Laboratories
Merck Sharp & Dohme
Morgan, Lewis & Bockius
Mulford Colloid Laboratories
National Drug Company
Oxy-Catalyst Inc.
Pennsylvania Railroad Company
Chas. Pfizer & Co. Inc.
Quaker Chemical Products Corp.
Paul Ribner
Richter, Lord & Levy
Rittenhouse Book Store
A. H. Robins Co. Inc.
Rohm & Haas Company
Samson Laboratories
Schnader, Harrison, Segal & Lewis
Scientific Literature Consultants
Smith, Kline & French Laboratories
E. R. Squibb & Sons
Arthur H. Thomas and Co.
Wallace Laboratories
Warner-Lambert Laboratories
Williams & Wilkins Co.
Wyanel Laboratories
Wyeth Laboratories

E. H. M.

Historical

Cataloguing Project. As foreshadowed in last year's report, Project Historical Cataloguing, made possible by a grant from the American Philosophical Society, got under way on 16 Feb. 1959. By the end of the calendar year, the meticulous and enthusiastic cataloguer engaged for the project, Mrs. Maria A. Shchuka, was able to report that 271 books had been catalogued in considerable depth, with the antediluvial cataloguing of 25 related books concurrently revised to conform with present findings. All of this material—chiefly donations by Dr. Edward B. Krumbhaar in the past decade—was printed before 1801. Mrs. Shchuka had the typing assistance of Mr. Lev Revucky approximately from the middle of April to the middle of September, when he was succeeded, following his resignation, by Mrs. Susanna B. Quinn. All three have been unable to devote full time to the project, and there was a month's hiatus during the summer, for the usual reason.

The next statement regarding the project—that the cataloguing of only 271 books, with cataloguing revision for another 25, involved the typing of 4,938 cards—might well appear incongruous to anyone not familiar with the varied demands made on historical collections. The fact is, of course, that a book is a variously

illuminating fragment of the culture of its time. The text may be the thing to one visitor; but he is companioned by a host of equally eager beavers who will be delighted, respectively, to learn through separate card indexes that the book was dedicated to, was translated, edited, printed, bound, or formerly owned—or that it contains complimentary verses—by some scholar, craftsman, poet or potentate in whom the beaver has a particular interest; that it contains a portrait of the author, or an illustration likely to be well-suited to the beaver's need. All of these points of historical interest (not by any means the whole of the story) may be focused on a single text of no great length; pick up one of the huge 15th or 16th century compilations, and the labor of establishing the names and dates, and then of typing the cards, may represent a labor of constructive analysis almost as time-consuming as that of creation. This labor of the former type is taking place, through necessity, in the Packard-Krumbhaar Historical Alcove. Only to those of our readers who have an inkling of the services in store could our muted conferences, we fear, and the unmuted tap of the typewriters, seem to bear any relationship to the sound of music.

Acquisitions. Brief reports on some of the historical acquisitions may be found in N.S., Nos. 29–32 of the *Fugitive Leaves*; and additional ones in the *Reports of the Library Administration* [to the Library Committee and the Council] for November and December, 1958, January, March, April, October, 1959. Among the numerous donors, it is fitting to cite again, for the extent of their benefactions, our Fellows Drs. Samuel X Radbill, Fred B. Rogers, and J. Monroe Thorington.

Exhibits. In addition to exhibits related to the programs of the Section on Medical History, the curator prepared exhibits on the following subjects: 1) Gray's *Anatomy*, in observance of the centennial of the first publication of this famous text. The exhibit included copies of the first English and American editions, and numerous later ones, including one in Chinese; 2) theses of 18th century American medical graduates of the University of Edinburgh; 3) 19th century specimens of American medical historiography. Two consecutive exhibits of postage stamps of medical interest were provided, from his personal collection, by our Fellow Dr. Henry A. Arkless. Finally, the Librarian and the curator collaborated on an exhibit, displayed at the Free Library of Philadelphia during Library Week, illustrating the resources of the library and the means used to publicize them.

Fugitive Leaves. There were 9 issues of the *Leaves* during the year, as against 7 in the year preceding. N.S., Nos. 24–28 continued and completed the check-list of the theses of American medical graduates of the University of Edinburgh in the 18th century—a "little list" for which there was some demand from outside the *Leaves'* regular circle of recipients. Nos. 29–32 reported on and, in some cases, reproduced some of the historical acquisitions.

Extra-mural. The curator's Fielding H. Garrison Lecture, "A View of 19th Century Medical Historiography in the United States of America"—delivered before the American Association for the History of Medicine, in Cleveland, in May—was published in the *Bulletin of the History of Medicine* 33: 415–435, Sept.–Oct., 1959.

W. B. McD., 2d

MEDICAL DOCUMENTATION SERVICE

During the fiscal year 1958–59, the Medical Documentation Service continued the expansion of its activities and personnel begun the previous year, and established itself firmly as a self-supporting department of the library.

The increased volume of work, particularly in fields which could not conveniently be subcontracted to outside personnel, necessitated a significant expansion of the full- and part-time staff early in the year. Mrs. Margaret Dardis was employed to assist Mrs. Jean Stevens with the secretarial work of MDS, as well as to assist in literature searching, abstracting and translating; she was joined later in the year by Mrs. Margaret Holloway, who had previously been employed by the library as a page and by MDS as a typist. Dr. Walter Bethel

was employed to assist in literature searching, and later in the scanning of the current periodical literature, as the director's time became increasingly occupied with administrative functions. Later in the year, he was joined by Dr. Robert Asnis, whose scientific training was utilized primarily in the two abstracting projects, for Biological Abstracts and for the Cancer Chemotherapy Center at the National Institutes of Health, respectively, in which MDS is still engaged. Meanwhile, Miss Hazel Collier was employed to assist in the same abstracting projects, as well as in microfilm operations, and the Service enjoyed the temporary assistance of Miss Rebecca Kirkpatrick, Mrs. Lilly Bellin and Miss Ruth Osler. In addition, a large number of subcontractors was employed during the year to handle the continuing volume of translations and abstracts.

A considerable portion of the efforts of MDS during 1958–59 was devoted to the two abstracting projects mentioned above: a continuing program of abstracting for Biological Abstracts, involving the preparation of approximately 5000 abstracts from articles in many languages and many fields of biology; and an extensive program for the National Institutes of Health which involved the detailed analysis and abstracting of approximately 900 articles on cancer chemotherapy. At the same time, the regular activities of MDS, including the scanning service, translating, literature searching and the microfilm operations, continued at a high rate.

The total gross income during the fiscal year 1958–59 was ca. $50,000, approximately double the figure for the previous year, the largest source of income being the abstracting program, which provided almost half of the total. Other major sources of income were the scanning service ($9000), literature searching ($5500), translations ($5500) and the microfilm operations for Wallace Laboratories ($5000). The total income was approximately balanced by total expenditures of about $48,000, which included, however, the acquisition of two typewriters and a certain amount of equity in the microfilm camera. An informal monthly bookkeeping system which was set up mainly to provide an indication of the current financial status of the Service revealed a surplus of approximately $2500 for the year which could be applied to the overhead expenses of the library. The expansion of the semi-permanent staff of MDS was reflected in a sharp increase in the salary expenditures during the fiscal year: over and above the salaries for the director and the executive secretary, these expenditures increased from $500 per month in November, 1958 to $1500 per month in June, 1959, totalling $13,500 for the fiscal year.

During 1958–59, the Service reported 5618 references from the current literature on 23 subjects, produced approximately 7000 abstracts and 127 translations, and carried out 124 literature searches. In addition, the MDS staff has frequently responded to requests for information on the telephone, and has assisted in the writing of a number of scientific articles, as well as participating in the activities of such outside organizations as the American Medical Writers Association and the Science Information Officers. The continued expansion of MDS activities in many fields underlines the importance of the assistance rendered by this Service to all types of personnel and organizations using the College of Physicians Library.

R. R. B.

STATISTICAL SUMMARY

Inventory

Accessioned items[1]

	1959		1958	
Incunabula[2]	419		419	
Manuscripts and typescripts	936		927	
General	198,995		194,588	
Accessioned pamphlets	4,508		4,415	
		204,843		200,349
Unaccessioned items[1]				
Reports	28,793		28,791	
Theses	59,763		59,521	
Pamphlets and reprints	231,458		231,453	
		320,014		319,765
Portraits		103,221		102,403

Current Serials

	Subscription	Gift	Exchange	Total
U.S.A.	343	399	65	807
Western European Continent	610	65	114	789
Latin America and West Indies	13	76	80	169
United Kingdom and Eire	117	25	30	172
Canada	6	17	9	32
Eastern European Continent	29	38	29	96
Asia (including Japan)	15	51	64	130
Africa	2	6	14	22
Pacific (including Australasia)	3	13	10	26
United Nations	10	1	—	11
International	5	5	1	11
Grand Total: 1959	1,153	696	416	2,265
Grand Total: 1958	1,104	682	383	2,169

New titles: A total of 152 serials was added in 1958–59.

Separate Issues received, checked-in on the cards, and shelved totaled 18,590. In addition, thousands of duplicate issues were received as usual. No attempt was made to count those held merely for exchange or other use.

Visitors in the Norris Room for the year totaled 3,410.

Readers' Use of the Library

Library Hours. The library was open, during the academic year, from 9:30 to 9:30 on Mondays and Wednesdays, from 9:30 to 5:30 on the other weekdays. During June, July, August, and the first half of September the library was open from 1 to 9:30 on Tuesdays; from 9 to 5 on the other weekdays, except Saturdays, when it was closed. The following legal holidays were observed: Thanksgiving, Christmas and New Year's, Memorial, Independence, and Labor Days.

Visitors:

	Totals
1959:	14,109
1958:	12,119

[1] Accessioned items in this library comprise the total number of bound volumes and such unbound pamphlets as have been catalogued as separate bibliographical units regardless of their size.

There remain many thousands of unaccessioned pamphlets awaiting accessioning and cataloguing. A true quantitative and qualitative picture of the library's holdings cannot be presented until this wealth of neglected material has been processed and duly registered in our 'accessioned', or 'volume', count.

[2] The library owns 421 incunabula but there are two cases of two bound together, reducing the number of accessioned items.

Circulation:

	Totals	*Intra-mural*	*Extra-mural*	*Books*	*Journals*
1959:	59,294	44,381	14,913	11,962	47,332
1958:	53,831	40,838	12,993	9,769	44,062

Inter-library loans: The library sent 9,161 (1958: 7,980) volumes on inter-library loan to 177 (1958: 237) libraries in 26 (1958: 32) States including Washington, D. C., Brazil, Canada, and France and has borrowed 13 (1958: 10) volumes from 3 (1958: 6) libraries.

Photostat and Cormac Sheets: 5,836 Photostat and Cormac prints were furnished on request (1958: 8,831).

Accessioned Acquisitions:

1959: 4,143 volumes (2,052 by purchase; 1,674 by gift; 417 by exchange). (Books: 1,312; Periodicals: 2,738; Pamphlets: 93).

1958: 3,560 volumes (2,074 by purchase; 1,135 by gift; 351 by exchange). (Books: 976; Periodicals: 2,549; Pamphlets: 35).

Non-accessioned Acquisitions:

1959: 2 Reports (1958: 44)
242 Theses (1958: 854)
9 Miscellaneous items (1958: 15)

Donations

The donors for the past year number 105 (1958: 127). The library is indebted for large gifts of books, pamphlets, and unbound periodicals to the following donors: Dr. S. Bellet; Children's Hospital; Dr. I. S. Cohen; Dr. R. Cornfeld; Dr. G. S. Crampton; Dr. J. Gershon-Cohen; Dr. S. Gross; Hahnemann Medical College; Jefferson Medical College; Dr. R. A. Kern; Dr. T. Grier Miller; National Drug Co.; Philadelphia College of Osteopathy; Mr. H. N. Pilling; Smith, Kline & French; Temple University; University of Pennsylvania; Valley Forge Army Hospital; Veterans Administration Hospital; Wistar Institute.

Various publishing houses, among the large group of corporate donors, have presented volumes as follows: F. A. Davis Company, 4; Lea & Febiger, 16; J. B. Lippincott, 38; W. B. Saunders, 90.

Other individual donors were as follows: Dr. G. Q. Adams; Mr. S. H. Adelman; Mr. & Mrs. M. Aronson; Mr. & Mrs. S. Aronson; Dr. O. Beaujon; Dr. E. H. Bedrossian; Mrs. H. A. Berkowitz; Dr. E. D. Bond; Dr. K. R. Boucot; M. E. & K. M. Brindle; Mrs. A. Burnett; Dr. B. Chance; Mr. & Mrs. R. J. Calgan; Dr. E. F. Corson; Dr. R. P. Custer; Mrs. J. S. Demov; E. S. Gifford; Mr. & Mrs. T. B. Harvey; Dr. S. L. Israel; Miss L. M. Kell; Mrs. E. L. Kempler; Dr. J. V. Klauder; Dr. H. Klickstein; Dr. E. B. Krumbhaar; Mr. M. Lipshutz; Dr. F. D. W. Lukens; Dr. C. Macfarlane; Dr. J. W. McConnell; Dr. T. M. McMillan; Dr. C. Muckle; Dr. D. P. Murphy; Dr. E. F. Nations; F. R. Packard Estate; Dr. E. P. Pendergrass; Mrs. M. D. Pfahler; Dr. B. J. Pimparker; Dr. A. N. Richards, Dr. F. B. Rogers, Laura & Gertrude Rothkugel; Dr. L. G. Rowntree; Dr. Harold G. Scheie; Dr. D. Schullian; Mr. & Mrs. T. L. Smith; Dr. J. M. Thorington; Dr. L. M. Tocantins; Dr. H. Tumen; Mrs. C. Urbach; Mrs. S. Wagman; Dr. E. L. Watkins; L. H. Welb; Dr. T. F. Whayne; Dr. E. G. Whitney; Dr. Wm. N. Winkelman, Jr.; Dr. I. J. Wolman; Miss M. H. Zentmayer through Dr. H. G. Scheie; Miss N. Zerfoss through Dr. N. Padis; C. Zigroser.

The Transactions & Studies was sent, either in exchange or as gift, to 478 organizations.

Theses and dissertations to the number of 215 have been received on exchange from the following European schools of medicine: Universities of Basel, Copenhagen, Erlangen, Jena, Lausanne, Louvain, Uppsala, Utrecht.

The Staff

Librarian

Elliott H. Morse

Assistant Librarian & Cataloger

H. Muriel Hodge

Serials Librarian

Muriel Zeldis

Circulation-Reference Librarian

Mrs. Elnora Smith

Serials Assistant

Dorothy Minton

Readers' Service Division Assistant

Joyce B. Cushmore

Order Librarian
Mrs. Kathryn E. Miragliotta

Cataloging Assistant
Mildred Gray

Library Secretary
Dolores Pagano

Curator of the Library's Historical Collections
W. B. McDaniel, 2d.

Medical Documentation Service
Robert Blanken, Director
Mrs. Jean C. Stevens, Executive Secretary

Pages
Robert Glass
Catherine Ledwell
Philip Ballinghoff
Daniel Cavanaugh

Approved:

John Franklin Huber, M.D.
Chairman, Library Committee

Annual Report of the Committee on the Mütter Museum and College Collections

THERE were 1898 visitors to the Mütter Museum of the College of Physicians during the year 1958–1959. It is open daily, except Saturdays and Sundays from 9.30 A.M. to 4 P.M. It is usually closed for lunch between 1 P.M. and 2 P.M., but by previous arrangement visitors may also come in during that hour. On the Stated Meeting Nights of the College the curator is in attendance until 8.30 P.M.

Besides the many visitors from all parts of the United States and Canada, many doctors and students from foreign countries were intrigued by the wealth of historical and pathological material found in the museum.

As in other years classes from many institutions came to see the many treasures that had been publicized by former classes. The schools represented were, Brown Preparatory School, Clifton Heights High School, St. Leonard's Academy, Hahnemann Medical College, Woman's Medical College, Temple University School of Medicine, and the Franklin School of Science and Arts.

In January talks were given to members of the Association of Medical Assistants by Dr. McDaniel, Mr. Morse and Mrs. Wade, after which a tour of the building was made.

A short article on the Mütter Museum appeared in the May 23rd issue of the *Journal of the American Medical Association*. This is appreciated since any publicity, be it ever so small, brings the museum to the attention of some who are unaware of its existence.

Photographs and articles associated with Dr. Benjamin Rush and some historic instruments were made available to Mr. Thom, artist for Parke Davis & Company, for photographing.

Because of the restriction placed upon articles taken into the Mütter Museum Collection, most of the accessions this year were catalogued under College Collections, although exhibited in the museum. Being in College Collections they may be loaned for any worth-while purpose, while if they are in the Museum Collection they may not be removed from the building.

Dr. J. Monroe Thorington presented the museum with two very fine exhibition cases that add much to the attractive new room of the museum.

Mrs. Ella N. Wade was reappointed curator for the year 1959–1960.

College Collections

The following portraits were restored by the artist, Mr. Frank Ireland: Philip Syng Physick, Harrison Allen, Jacob Solis-Cohen and Hippocrates.

Because of the extensive damage to one of the portraits that fell down during the summer, Mr. Ireland suggested that every portrait in the building be furnished with new wire and double hooks. This work has been begun by Mr. Allen and the janitorial staff and good progress has already been made.

The Committee was glad to be able to send a very fine print of the Alexander von Humboldt portrait by Charles Willson Peale, to Dr. Eduardo Röhl of Hamburg, Germany, at his request.

The following gifts were offered and accepted by the Committee on College Collections and the Council of the College, during the year:

A bronze medal of Hermann von Helmholtz, was presented by *Dr. Samuel X Radbill* and *Dr. Fred B. Rogers* added one of Albert Schweitzer which is a replica of one struck on his election to the National Academy of France in 1950.

Mrs. Helen Foss Wood presented a framed chart showing "Relationship of Doctors of Medicine in the Wood-Bacon-Packard Fami-

lies." This was given in memory of her husband, Dr. George Bacon Wood and is hung in the Wood Room.

An old tooth extractor, dated 1850, was presented by *Dr. Gerald Newton* and our generous donor, *Dr. Burton Chance* contributed an old pair of spectacles and a Geneva Lens Measure.

A cupping set with scarificator and glass cups from France was presented by *Major and Mrs. Aaron E. Carpenter.*

Many British War medals given to men in medical service have been donated by *Dr. Edward F. Corson.* He recently added two from the Indian Campaign to the collection.

Dr. Irvin M. Gerson presented a hemoglobinometer that formerly belonged to Dr. Samuel Loewenberg.

The Philadelphia Business Club presented Dr. Joseph Post with a plaque proclaiming him "National Physician of the Year." *Dr. Post* presented it to the College and a place was found for it in Hutchinson Hall.

A small bust of Dr. R. Tait McKenzie came to the College from *Dr. Douglas Macfarlan.*

The collection of walking canes that at one time belonged to famous physicians was augmented by the acquisition of a gold-headed one, on the head of which is engraved, "D. Hayes Agnew, May 16, 1873." Dr. Agnew gave the cane to Dr. DeForest Willard and it was presented to the College by Dr. Willard's daughter-in-law, *Mrs. DeForest P. Willard.*

Two objects that will interest Dr. Radbill's class in pediatrics are a wooden nipple and a wooden measuring device for teaspoon and tablespoon presented by *Dr. Norman L. Knipe.*

Wax votive offerings from Belgium, a carved polychrome group from Austria depicting the circumcision of Christ, and a commemorative coin of Max Planck were presented by *Dr. J. Monroe Thorington.*

Mrs. Ella N. Wade was reappointed clerk-technician for the year 1959–1960.

THEODORE F. BACH, M.D., *Chairman*

Transactions of the Sections

SECTION ON GENERAL MEDICINE

26 October 1959

RECURRENT MYOCARDIAL INFARCTION AFTER CESSATION OF ANTICOAGULANT THERAPY. Louis R. Dinon, M.D., and Joseph B. Vander Veer, M.D. (Discusser: Francis C. Wood, M.D.) (*Abstract 1*, below)

MASQUERADES OF CARCINOMA OF THE PANCREAS. Edward C. Raffensperger, M.D. (Discusser: Thomas E. Machella, M.D.) (*Abstract 2*, below)

CURE OF NEPHROTIC SYNDROME BY RELIEF OF PARTIAL INFERIOR VENA CAVA OBSTRUCTION DUE TO REACTIVE LYMPHOID TISSUE HYPERPLASIA. Joseph A. Splendido, M.D. (Discusser: John Kapp Clark, M.D.) (*Abstract 3*, below)

EVALUATION OF MITRAL VALVE FUNCTION IN PATIENTS WITH RHEUMATIC HEART DISEASE. Donald F. Heiman, M.D.* (Discusser: Hadley L. Conn, Jr., M.D.) (*Abstract 4*, below)

23 November 1959

THE SELECTION OF ANTIBIOTICS IN STAPHYLOCOCCAL INFECTION. Robert I. Wise, M.D. (Discusser: Harrison F. Flippin, M.D.) (*Abstract 5*, below)

TOLBUTAMIDE AND LIPOPROTEINS—PRELIMINARY REPORT. Joseph T. Beardwood, Jr., M.D., Sigmund R. Greenberg, M.D.*, and Roy G. Klotz, M.D.* (Discusser: Charles R. Shuman, M.D.) (*Abstract 6*, below)

SYMPATHECTOMY IN PRESENT-DAY TREATMENT OF PERIPHERAL VASCULAR DISEASE. Meyer Naide, M.D., Michael M. Etzl, M.D., and Charles Schnall, M.D.* (Discusser: Brooke Roberts, M.D.) (*Abstract 7*, below)

PHENOLIC ACID EXCRETION IN CIRRHOSIS AND PHEOCHROMOCYTOMA. J. Deaver Alexander, M.D. (Discusser: Lewis A. Barness, M.D.*) (*Abstract 8*, below)

* By invitation.

25 January 1960

THE TRANSFER OF ANTIBODY-PRODUCING CELLS. Irwin L. Stoloff, M.D., and W. Paul Havens, Jr., M.D. (Discusser: Rupert E. Billingham, Ph.D., Sc.D.*) (*Abstract 9*, below)

THE URINARY EXCRETION OF CATECHOLAMINES AND MANDELIC ACID DERIVATIVES IN PHEOCHROMOCYTOMA. F. William Sunderman, Jr., M.D.*, Philip D. Cleveland, M.S.*, and F. William Sunderman, M.D., Ph.D. (Discusser: William A. Jeffers, M.D.) (*Abstract 10*, below)

IDIOPATHIC MYOCARDIAL HYPERTROPHY: A Review of 20 Cases. Marvin A. Sackner, M.D.*, and Samuel Bellet, M.D. (Discusser: Arnold J. Rawson, M.D.*) (*Abstract 11*, below)

SYSTEMIC CHONDROMALACIA (VON MEYENBERG'S DISEASE): CASE REPORT. Robert J. Gill, M.D. (Discusser: John P. Decker, M.D.) (*Abstract 12*, below)

SECTION ON MEDICAL HISTORY

17 November 1959

A LONG-HAIRED INDIAN—AND A CORRECTION. Edward F. Corson, M.D.

THOMAS LINACRE: A PHYSICIAN-SCHOLAR OF THE RENAISSANCE. William Sharpe, M.D.*

A GUIDE TO HEALTH—A LETTER TO THOMAS JEFFERSON BY CHARLES WILLSON PEALE. Fred B. Rogers, M.D.

16 February 1960

THE HISTORY OF THE TETRALOGY OF FALLOT. Helen B. Taussig, M.D.*

SECTION ON OPHTHALMOLOGY[1]

19 November 1959

PIGMENTED TUMORS OF THE OPTIC NERVE HEAD. Lorenz E. Zimmerman, M.D.*

[1] Abstracts of the presentations at the Section customarily appear in the *American Journal of Ophthalmology* and *A.M.A. Archives of Ophthalmology*.

(Twenty-second Annual de Schweinitz Lecture)

17 December 1959

Sturge-Weber Syndrome: A Report of Two Cases with Pathological Examination of the Eyes. Richard M. Lubowitz, M.D.*

Carbonic Anhydrase in the Young Eye. Jubran G. Mamo, M.D.*

The Use of Heparin in the Treatment of Diabetic Retinopathy. John K. Finley, M.D. and Harry S. Weaver, M.D.

21 January 1960

Devic's Syndrome with an Unusual Etiology—A Clinical-Pathological Case Report. Josefina M. Orteza, M.D.*

Glaucoma Surgery with Silicone Rubber. Richard A. Ellis, M.D.

Carotid Cavernous Sinus Fistula with some Unusual Ocular Signs. Robert Kirschner, M.D.*, and Martin K. Lubrow, M.D.*

18 February 1960

The Trabecular Meshwork by Electron Microscopy. Levon K. Garron, M.D.*

SECTION ON OTOLARYNGOLOGY[2]

18 November 1959

Present-Day Techniques in Hearing: Report of a Visit to the Clinics of Drs. Wullstein and Zollner in West Germany. Woodrow D. Schlosser, M.D.* (Discusser: David Myers, M.D.)

Unusual Foreign Body Problems in Children. William A. Lell, M.D. (Discusser: Emily L. Van Loon, M.D.)

Anatomical Observations for Rhinoplastic Surgery. Romeo A. Luongo, M.D. (Discusser: Benjamin H. Shuster, M.D.) Joint Meeting of the Section on Otolaryngology, College of Physicians of Philadelphia, and the Philadelphia Laryngological Society.

2 February 1960

Symposium on Recent Advances in the Management of Abnormalities of the Paranasal Sinuses

Acute Sinusitis. Herbert P. Harkins, M.D.

Chronic Sinusitis. Austin T. Smith, M.D.

Allergic Sinusitis. Louis E. Silcox, M.D.

Neoplasms of the Paranasal Sinuses. Robert D. Harwick, M.D.*

Radiology of the Paranasal Sinuses. Antolin Raventos, M.D.* Joint Meeting of the Section on Otolaryngology, College of Physicians of Philadelphia, and the Philadelphia Laryngological Society.

SECTION ON PUBLIC HEALTH, PREVENTIVE AND INDUSTRIAL MEDICINE

13 October 1959

Social Psychiatry in Britain.[3] Henry R. Rollin, M.D., D.P.M.*, Epsom, England. (Discusser: Francis H. Hoffman, M.D.)

Dr. William Harvey Perkins—A Tribute.[4] Heinrich Brieger, M.D., D.P.H.*

Presentation of the first William Harvey Perkins Prize in Preventive Medicine (Medical Student Essay Contest Award) to Cyril F. Conway, Jr., M.D.

ABSTRACTS

Abstract 1

Recurrent Myocardial Infarction after Cessation of Anticoagulant Therapy. Louis R. Dinon, M.D., and Joseph B. Vander Veer, M.D.

It has been our impression for some years that reactivation of the original pathologic process and various thromboembolic complications may follow the abrupt cessation of anticoagulation. Because of a possible causal relationship and with the hope of obviating such complications, we began in 1951 to "taper off"

[2] Abstracts of the presentations at this Section customarily appear in the *A.M.A. Archives of Otolaryngology.*

[3] Published in *Transactions & Studies*, January 1960.

[4] Published in *Transactions & Studies*, April 1960.

anticoagulants in the patients who were directly under our care. Several physicians using anticoagulants in their hospitalized patients did not withdraw treatment slowly, but stopped it abruptly at the time of discharge or reduced the maintenance dosage rapidly during the last few days of hospital care. Thrombotic recurrences seemed more frequent in these than in the patients in whom the therapy was more gradually reduced. Recently, the recurrence of acute myocardial infarction within a few days to two weeks in three patients in whom anticoagulant therapy had been stopped abruptly on leaving the hospital again brought this question forcibly to our attention.

Eighteen patients with recurrence of acute myocardial infarction within four weeks after the discontinuation of anticoagulant therapy were collected from our personal experience on the wards and private services of the Pennsylvania Hospital. Their data were summarized in tabular form. The anticoagulant was started in all patients soon after their admission to the hospital and maintained for a minimum of twenty-four days and a maximum of eighty-two days. The drug was abruptly discontinued in five patients. Withdrawal was accomplished in two patients in three and four days, in ten patients in about nine days, and in one patient in a period of twenty-one days. The interval from the last dose of the drug to the recurrence ranged from two to twenty-four days and averaged twelve days. There were six deaths with the clinical recurrence. Other episodes of this type, not included in this report, were also encountered beyond the period of thirty days after discontinuation of therapy.

A review of our experience in the treatment of acute myocardial infarction with anticoagulants suggests to us that the recurrence of this condition following cessation of therapy is more than fortuitous. The abrupt withdrawal of anticoagulants seemed to be followed by such an event more often than when the drug was gradually reduced over a period of some weeks. Clinical studies of a controlled statistical type are needed to confirm this association. The possible significance of the concept of "rebound" hypercoagulability of the blood and the local effects of removal of anticoagulation on a deranged coronary blood flow were discussed. We believe consideration should be given to more prolonged anticoagulation after clinical recovery in the average patient with acute myocardial infarction. This might be carried on for several weeks or months after the patient is ambulatory. On termination of such therapy the anticoagulant should be "tapered off" very gradually, preferably over a period for at least four weeks.

Abstract 2

MASQUERADES OF CARCINOMA OF THE PANCREAS. Edward C. Raffensperger, M.D.

The presenting symptoms and physical findings of patients with carcinoma of the pancreas may be bizarre and puzzling. Frequently they mimic and, at times, may be associated with other pathological conditions. To emphasize the unusual symptoms and physical findings and to attempt to establish, if possible, a pattern for early diagnosis, 100 cases of proven carcinoma of the pancreas were reviewed.

There were 64 males and 36 females in the series. Only one patient was under 40 years of age and most were between 50–70 years of age.

The presenting symptoms were: pain or distress, 44; jaundice, 36; anorexia, 8; weakness, weight loss and constipation, each 7.

In contrast to the presenting symptoms, symptoms which occurred during the course of the disease were: weight loss, 78; anorexia, 65; pain, 57; jaundice, 57; constipation, 17; diarrhea, 11; personality changes, 9; and thrombophlebitis, 3.

The symptoms usually considered classical for carcinoma of the pancreas, i.e. abdominal pain, anorexia, weight loss and jaundice were more prominent during the course of the disease than at the time of the initial examination. This may account for the 49% accuracy of diagnosis in this series by the examiners at the time of hospital admission.

The classical pain of carcinoma of the pan-

creas has been described as severe, deep-seated, radiating to the lumbar region and poorly controlled by medication. In this series the pain was mild in 24, moderately severe in 50, and severe in 26. It was located in the epigastrium, 42 per cent; right upper quadrant, 22.7 per cent; back, 21 per cent; generalized, 14 per cent; paraumbilical region, 10.5 per cent; and left upper quadrant, 8.75 per cent.

The most common physical finding was a palpable liver which was found in 45 per cent. An abdominal mass was palpable in 19 and a gall bladder in 14 per cent. The gall bladder was palpable 35 per cent of those who were jaundiced.

There were numerous associated pathological conditions. Cholelithiasis or choledocholithiasis were present in 10 per cent; diabetes in 5; peptic ulcer in 4; neoplastic malignancy in 4; alcoholic cirrhosis in 2; and renal calculi in 2 per cent.

Symptoms were produced which seemed far removed from those originating in the pancreas and included dysphagia, dyspnea, anemia, recurrent hydrothorax, gastrointestinal hemorrhage—both as hematemesis and melena, sloughing lesions of the chest wall, constipation, diarrhea and emotional instability.

The erroneous diagnosis that was made included: common duct stone, carcinoma of stomach or colon, retroperitoneal neoplasm, pancreatitis, hepatitis, skeletal pain, psychoneurosis, peptic ulcer.

In this series there was no constant symptom pattern or physical finding. The usually accepted classical symptoms of carcinoma of the pancreas were found in less than 50 per cent of the cases. It is suggested that carcinoma of the pancreas be included in the diagnostic possibilities when the entire picture is bizarre and unusual but when the clinical hunch is carcinoma and the primary site is not readily discernible.

Abstract 3

CURE OF NEPHROTIC SYNDROME BY RELIEF OF PARTIAL INFERIOR VENA CAVA OBSTRUCTION DUE TO REACTIVE LYMPHOID HYPERPLASIA. Joseph A. Splendido, M.D.

M. R., a 31 yr. old white female, was admitted to the Chestnut Hill Hospital on 8/20/56 with the nephrotic syndrome. Her past medical history revealed trauma to the lumbar area as a child and young adult: and questionable history of pyelonephritis in 1956.

Laboratory studies revealed normal hemogram, blood urea nitrogen 8, fasting blood sugar 110, creatinine 0.9; total proteins 4.2, albumin 1.9, globulin 213, normal electrolytes; cholesterol 464; normal serum complement, BSP normal, serology for syphilis and lupus preparations were negative. Urinalysis showed specific gravity 1.005–1.007, albumin 1 to 4 plus, and no significant formed elements. The 24 hour urinary protein excretion was 16.8 grams (albumin 13.7, globulin 3.1). An intravenous pyelogram revealed a mass containing stippled calcification lateral to the upper lumbar spine, displacing the right kidney.

A month's therapy with meticorten (60 mgm. daily), metandren linguets, low-sodium diet and bed rest, caused the patient to lose most of her edema, and reduced her urinary protein to 8.6 grams per 24 hours. For the next nine months there was no change in the patient's edema or chemistry.

On 6/13/57, surgical retroperitoneal exploration revealed a kidney-sized tumor mass above and behind the right kidney, intimately adherent to the inferior vena cava, which was able to be removed in toto. A biopsy of the right kidney was done, but no pressures in the inferior vena cava were taken as the operator felt he was dealing with a carcinoma.

The mass proved to be reactive lymphoid tissue hyperplasia, and the renal biopsy was microscopically normal.

Immediate, progressive improvement in the patient's nephrotic syndrome resulted; although it was four months before her plasma proteins returned to normal, and eight months before proteinuria completely disappeared. These data were presented in tabular form.

DISCUSSION:

The nephrotic syndrome is a, "common disorder in adults, with many causes" (Kark, R. M., et al. The Nephrotic Syndrome in Adults, Annals of Internal Medicine, *49:* 751–774, October 1958). Among these causes is the elevation of pressure in the inferior vena cava, whether from back pressure or direct pressure phenomena. "Its importance, physiologically, is one where a simple mechanical disturbance of blood flow can cause a complex metabolic derangement." Blainey, Hardwicke and Whitfield (cited by Kark, et al.) reported the first case where it was possible to cure the nephrotic syndrome by relief of elevated inferior vena caval pressure via pericardiectomy in their case of constrictive pericarditis.

If we are correct in our assumptions, this will be a subsequent case of cure of the nephrotic syndrome due to elevated inferior vena caval pressure by removal of a partially obstructing tumor mass composed of reactive lymphoid tissue hyperplasia.

Abstract 4

EVALUATION OF MITRAL VALVE FUNCTION IN PATIENTS WITH RHEUMATIC HEART DISEASE. Donald F. Heiman, M.D.

The impetus provided by modern cardiac surgery and the development of techniques for catheterizing the left side of the heart have added materially in recent years to our understanding of the patho-physiologic alterations occurring with chronic valvular rheumatic heart disease. Such alterations associated with mitral stenosis and/or insufficiency can be appraised in terms of "left heart" volume, pressure, and flow relationships. A rather complete characterization of these parameters can be obtained at the time of left heart catheterization by simultaneous transciption of the left atrial and left ventricular pressure pulses, following which indicator-dilution curves are obtained by sampling from a peripheral artery and the left atrium after injection of a suitable indicator into the left ventricle.

Selected portions of physiological data from 29 patients with mitral valvular disease are presented to illustrate the following:

1) In patients with predominant mitral insufficiency the arterial dilution curve demonstrates lowering of the peak concentration and flattening of the terminal slope. Contrariwise, in patients with predominant mitral stenosis the contour of the arterial dilution curve differs little from the normal.

2) Alterations in the shape of the arterial dilution curve can be shown to depend to a considerable degree on changes in so-called left heart "total volume" and "mixing volume". In mitral stenosis, increases in total volume are disproportionately greater than any increases in mixing volume, whereas changes in these parameters tend to parallel each other in mitral insufficiency. Therefore the ratio mixing volume/total volume affords a clear separation of patients with predominant mitral stenosis from those with predominant mitral insufficiency.

3) The diastolic pressure gradient across the diseased mitral valve not only depends on the degree of stenosis but is also a function of the cardiac output. In cases with associated mitral insufficiency, both the regurgitant and forward flow must be estimated since only with knowledge of *total* blood flow across the mitral valve can the pressure gradient be properly assessed.

4) In patients with severe, "pure" mitral insufficiency, a pressure gradient may exist throughout the entire diastolic period in the absence of tachycardia.

5) Heart rate may influence the magnitude of the diastolic pressure gradient since increase in rate occurs at the expense of the diastolic filling period.

Abstract 5

THE SELECTION OF ANTIBIOTICS IN STAPHYLOCOCCAL INFECTION. Robert I. Wise, M.D.

Staphylococcal disease varies in degree of severity from simple pustules to overwhelming bacteremia and fatal infection. In the benign group of infections, the natural defenses are

usually adequate and chemotherapeutic agents may not contribute to the curative process. Patients with infections of moderate severity may require an antibiotic with bacteriostatic effect. Selection of the antibiotic may be a result of good judgment and in vitro tests employing antibiotic disks. If the patient has a severe infection such as staphylococcal endocarditis, pneumonia with bacteremia, etc., recovery may depend on the maintenance of the antibiotic in the patient in concentrations that are greater than the bactericidal effects. This information cannot be determined with the disk test but may be obtained with the tube dilution technique. Knowing the bactericidal concentration required, the antibiotic should be administered in a manner that provides and maintains desired concentration.

Abstract 6

TOLBUTAMIDE AND LIPOPROTEINS—PRELIMINARY REPORT. Joseph T. Beardwood, Jr., M.D., Sigmund R. Greenberg, M.D., and Roy G. Klotz, M.D.

Of late there has been renewed interest in the criteria for labeling a diabetic patient as "stabilized". It has been assumed that insulin will normalize not only serum glucose but also products of fat metabolism and products of intermediate fat metabolism. Therefore a diabetic who has been taking insulin and whose blood sugar stabilizes around 120 mgms. per cent is said to be well controlled. Unconsciously, one assumes that the fatty acids, cholesterol, phospholipids, cerebrosides, etc., are therefore also "normalized" or well controlled.

With the advent of oral substitutes for insulin one wonders whether the criteria for stabilization are being met. The fact that a patient on Tolbutamide has a blood sugar of 120 mgms. may not necessarily indicate full control of his diabetes. What is happening to the lipoproteins? If one considers degenerative lesions of diabetes mellitus (atherosclerosis, nephropathy, etc.) as a manifestation of abnormal intermediary lipid metabolism, then one must know the effect of oral substitutes on these intermediate products.

We have been interested in lipoproteins, especially beta lipoproteins, and their relationship to diabetic complications. It has been thought that increases in beta lipoprotein may parallel the degenerative vascular lesions.

In this study we determined the alpha and beta lipoproteins of patients while on insulin and after their conversion to Tolbutamide. All patients were clinically well-controlled, with blood sugars considered within the normal range, both on insulin and when converted to Tolbutamide. Of the ten completed patients, nine have shown increases in beta lipoproteins when on Tolbutamide, as compared to their levels while on insulin. The cholesterol levels have not shown similar changes.

What the long term result of these oral substitues on diabetic degenerative complications will be is a matter which time itself will solve. However, newer methods and their application to clinical problems may help to solve many present problems.

Abstract 7

SYMPATHECTOMY IN PRESENT DAY TREATMENT OF PERIPHERAL VASCULAR DISEASE. Meyer Naide, M.D., Michael M. Etzl, M.D., and Charles Schnall, M.D.

Lumbar sympathectomy still has an important place in the management of patients with peripheral arterial occlusive disease, despite the advent of vascular grafting. Vascular grafts are feasible or should be done in only a minority of patients with peripheral arterial occlusions. Lumbar sympathectomy is available as another surgical procedure which can increase blood flow in some ischemic extremities. Lumbar sympathectomy does increase blood flow to the skin but not to muscle. However, it is in the skin that gangrene starts and where blood is needed most. There are no tests preceding sympathectomy which will accurately foretell whether the operation will be of benefit. There are, however, clinical clues available in most patients which will

give one a general idea as to whether sympathectomy will be of value. These include tests such as a rise in temperature in the area of inflammation or infection indicating some collateral circulation. The growth of hair on toes is an additional useful prognostic sign. The presence of increased vascular tone is another useful sign indicating possible benefit from a sympathectomy. The indications for sympathectomy are discussed as well as the types of patients in whom it should be utilized. Contraindications are also discussed, such as extensive progressive gangrene and the presence of extreme ischemia such as one sees in a cadaveric-looking foot. Reduced to its simplest terms, a lumbar sympathectomy is indicated if one has a patient in whom a decision is made that the extremity will be lost unless additional blood can be supplied to it and a vascular graft is not feasible, provided gangrene and ischemia are not extreme.

Abstract 8

PHENOLIC ACID EXCRETION IN CIRRHOSIS AND PHEOCHROMOCYTOMA. J. Deaver Alexander, M.D.

During recent years the biochemical alterations noted in various diseases have been greatly expanded. It was fifty years ago that Sir Archibald Garrod first proposed the importance of biochemical reactions and genetics, coining the term "inborn errors of metabolism". He was especially interested in albinism, alcaptonuria, cystinuria, and hematoporphyria congenita. In recent years this list has been greatly expanded and a number of these metabolic disturbances have been found to profoundly affect the brain. One of the most important is phenylketonuria.

Other genetic disorders of tyrosine and phenylalanine metabolism have been described; recently Armstrong and others have applied similar biochemical techniques to the diagnosis of certain secreting tumors—namely pheochromocytoma. In the urine of these patients, increased quantities of epinephrine and nor-epinephrine breakdown products appear. One of these compounds—vanillyl mandelic acid, or V.M.A., promises to be the most sensitive index of adrenalin and noradrenalin secretion.

It has also been noted that severe avitaminoses affect tyrosine metabolism. I have also detected abnormal quantities of certain phenolic acids in severe liver disease. One unidentified organic acid is excreted in high concentration by patients in hepatic coma. It is now in the early stages of identification.

Abstract 9

THE TRANSFER OF ANTIBODY-PRODUCING CELLS. Irwin L. Stoloff, M.D.

When splenic and lymphoid cells from hyperimmune animals are transferred to nonimmune hosts, the continued production of antibody can be demonstrated in the new hosts. The value of bone marrow in protecting against the lethal effects of irradiation and its possible therapeutic uses in man suggested the need to determine whether marrow cells transferred from hyperimmunized animals can be shown to produce antibody in nonimmunized hosts. If this does occur, it might, (a) provide a method of following the fate of the transferred cells, and (b) shed some light on the factors involved in the production of homologous disease.

Inbred strains of mice used as donors were hyperimmunized with tetanus toxoid. Cells from the bone marrows were then harvested and inoculated intravenously into isologous and homologous mice that had received 850 r of total-body irradiation within two hours prior to transfer. Seven, fourteen, and twenty-five days after transfer, the degree of immunity of the hosts was determined by challenge with tetanus toxin.

The results demonstrate that marrow cells are capable of continued production of antitoxin after transfer. Isologous cells produced antitoxin over the twenty-five-day period studied after transfer with little reduction after the first week. Homologous cells produced slightly less antitoxin at seven days but exhibited a more rapid decline in antitoxin

production at fourteen and twenty-five days after transfer.

Abstract 10

THE URINARY EXCRETION OF MANDELIC ACID DERIVATIVES AND CATECHOLAMINES IN PHEOCHROMOCYTOMA. F. William Sunderman, Jr., M.D., Philip D. Cleveland, M.S., and F. William Sunderman, M.D., Ph.D.

A method for the measurement of Mandelic Acid Derivatives in urine has been developed in our laboratories. The urinary excretion of mandelic acid derivatives in 46 normal laboratory workers was found to be in the range of 0.7 to 6.8 mg. per 24 hours (mean 3.8, S.D. ± 1.6). In 71 hypertensive patients, excluding cases of proven pheochromocytoma, the excretion of mandelic acid derivatives ranged from 0.5 to 10.0 mg. per 24 hours (mean 4.3). Three patients with benign pheochromocytoma of the adrenal medulla excreted, respectively 41, 38, and 15 mg. of mandelic acid derivatives per 24 hours; the excretion of mandelic acid derivatives returned to the normal range of values following excision of the tumors. A child with a pheochromocytoma of the organ of Zuckerkandl excreted 17 mg. per 24 hours, and a patient with malignant pheochromocytoma and extensive metastases excreted 250 mg. of mandelic acid derivatives per 24 hours.

In comparison, the urinary excretion of total unconjugated urinary catecholamines in 47 normal laboratory workers ranged from 9 to 102 mcgm. per 24 hours (mean 46, S.D. ± 22). In 418 hypertensive patients, excluding cases of proven pheochromocytoma, the excretion of catecholamines ranged from 9 to 159 mcgm. per 24 hours (mean 43). Catecholamine excretions in the three patients with benign pheochromocytoma of the adrenal medulla averaged 225, 600, and 260 mcgm. per 24 hours, respectively. The child with pheochromocytoma of the organ of Zuckerkandl excreted 265 mcgm. of catecholamines per 24 hours, and the patient with malignant pheochromocytoma excreted 4500 mcgm. per 24 hours.

Estimation of urinary mandelic acid derivatives has several advantages over estimation of urinary catecholamines as an aid in the diagnosis of pheochromocytoma. Urinary excretion of mandelic acid derivatives is less subject to diurnal fluctuation than is the excretion of catecholamines. The precision of analytical measurement of mandelic acid derivatives is superior to that of catecholamines. Also it may be noted that the percentage of endogenous epinephrine and nor-epinephrine which is excreted in the form of mandelic acid derivatives is many times that excreted as urinary catecholamines.

Abstract 11

IDIOPATHIC MYOCARDIAL HYPERTROPHY: A REVIEW OF 20 CASES. Marvin A. Sackner, M.D., and Samuel Bellet, M.D.

The clinical findings in 9 patients with clinical diagnoses, and 11 patients with necropsy diagnoses of idiopathic myocardial hypertrophy were studied. The ages of these patients were 39 ± 8 years; 75 per cent were males. The patients were subdivided into 3 groups: (1) increasing intractable congestive heart failure (11 cases); (2) cardiac enlargement with minimal or no congestive heart failure (6 cases); and, (3) clinical picture of portal cirrhosis (3 cases). Antecedent upper respiratory infection occurred in 30 per cent, as did a history of alcoholism. Gallop rhythm was observed in 50 per cent and functional systolic murmurs in 25 per cent of these patients. The most common electrocardiographic findings were sinus rhythm, left ventricular hypertrophy, and a diphasic P wave in V_1. The high incidence of the latter finding was highly significant (p .001) compared to a group of electrocardiograms of cases with hearts larger than 500 gm. dying from other causes. Chest roentgenograms showed globular, markedly enlarged hearts. Angiocardiograms showed dilatation of both chambers. Cardiac catheterization carried out in 7 patients, group 1 (4 cases) and group 2 (3 cases), revealed findings typical of those observed in congestive heart failure. In none did the contour of the right ventricular pressure curve resemble that

described for constrictive pericarditis or fibroelastosis. Ballistocardiograms and pulmonary function studies were consistent with congestive heart failure. Necropsy revealed hypertrophy and dilatation of the heart, and in most instances areas of focal interstitial fibrosis. The endocardium was thin and smooth except in areas underlying mural thrombi—which were found in the ventricles of 55% of cases. Pulmonary emboli occurred in 45% and systemic emboli in 36% of necropsied cases.

Abstract 12

SYSTEMIC CHONDROMALACIA (Von Meyenberg's Disease): Case Report. Robert J. Gill, M.D.

In 1936, Von Meyenberg described a syndrome characterized by upper respiratory symptoms, generalized cartilaginous destruction, arthritis, and iritis. The present case is the sixth to be reported in the literature.

A 71 year old white female, previously well, gave a 15 month history of swelling of the ears leading to chronic thickening. Following this, she developed recurrent upper respiratory infections, and iritis. Hoarseness, dyspnea, and chronic, mildly productive cough became persistent. There was no history of arthritis, rheumatic fever or allergy in this patient.

Physical examination revealed a thickened, deformed nose and ears, vocal hoarseness and a croaking sort of cough. Heart and lungs were normal. No deformities of the joints were present, nor was the remainder of the physical examination remarkable.

Bronchoscopic and laryngoscopic examinations revealed thickening and reddening of the entire respiratory mucosa. The vocal cords were thickened by edema. Allergy studies were negative.

The only remarkable laboratory finding was an elevated sedimentation rate. Electrocardiogram and x-ray examination of the chest were normal. Sputum cultures were not remarkable.

Several hours after bronchoscopy the patient developed an asthmatic syndrome which initially responded to conventional therapy but soon failed to respond and she died in status asthmaticus.

Autopsy Findings:

Grossly, the primary findings were thickened and deformed nose and ears, dense pleural adhesions, emphysematous lungs, dark red edematous mucosa of the respiratory tree, thickening of the bronchi, thick mucoid plugs in, and partial ossification of some of the smaller bronchi. The respiratory airway was narrowed.

Microscopically, the cartilages of the respiratory tree and ears showed areas of necrosis of the cartilage matrix with replacement by vascularized fibrous tissue or collagen tissue and an infiltrate of mononuclear, plasma and neutrophilic cells. The mucosa and submucosa showed chronic inflammatory change.

Comment:

This patient clinically fits the picture of systemic chondromalacia, though she lacked peripheral arthritis. Autopsy findings were confirmatory.

The cause of this disorder is unknown but superficially appears to fall into the broad group of collagen disorders and perhaps has some relationship to rheumatoid arthritis. One other reported case showed high titers of antistreptolysin, and another a rheumatic heart lesion with 2 abnormal electrocardiograms. No autoantibodies against cartilage antigens have been found.

The disease occurs in both sexes, from childhood to old age, with a duration so far reported from one to seven years. Clinical diagnosis is possible and of practical importance. At least two of the reported cases have gone into remission following the administration of ACTH or cortisone.

List of College Lectures, 1959

7 January 1959

CHRISTIE, RONALD V. Chronic Bronchitis and Emphysema. (Nathan Lewis Hatfield Lecture XLIII; *Transactions & Studies*, July 1959).

4 February 1959

ADAMS, RAYMOND D. Concerning Certain Psychological Principles which have been Derived from Clinico-pathologic Study. (Weir Mitchell Oration XV; *Transactions & Studies*, July 1959).

4 March 1959

BOCKUS, HENRY L. Functional Disorders of the Digestive Tract—Philosophic and Nosologic Aspects. (Benjamin Musser Lecture VII; *Transactions & Studies*, July 1959).

1 April 1959

BENSON, OTIS O., JR. Man in Space—The Medical Problem. (James M. Anders Lecture XXXVIII; *Transactions & Studies*, October 1959).

13 May 1959

Joint Meeting of Philadelphia County Medical Society and College of Physicians of Philadelphia.

I. Presentation of the 36th Annual Strittmatter Award of the Philadelphia County Medical Society to Dr. Richard A. Kern by Dr. Robert A. Kimbrough, Chairman of the Award Committee.

II. Presentation of citations to physicians who have completed fifty years in the practice of medicine. Citations awarded by Dr. John T. Farrell, Jr., President, Medical Society of the Commonwealth of Pennsylvania.

7 October 1959

KOPROWSKI, HILARY. Historical Aspects of the Development of Live Virus Vaccines in Poliomyelitis. (Alvarenga Prize Lecture XIX; *Transactions & Studies*, January 1960).

4 November 1959

POMERAT, CHARLES M. Visualization of Cellular Events in the Healing of Burns. (Mary Scott Newbold Lecture LXXVII; *Transactions & Studies*, July 1960). Joint Meeting, Philadelphia County Medical Society and College of Physicians of Philadelphia.

2 December 1959

DENNY-BROWN, DEREK E. The Nature of Polymyositis and Related Muscular Diseases. (Hira S. Chouké Lecture III; *Transactions & Studies*, July 1960).

14 December 1959

SHRYOCK, RICHARD H. The College of Physicians of Philadelphia in Historical Perspective. (Celebration of the 50th Anniversary of the Dedication of the Hall of the College; *Transactions & Studies*, April 1960).

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1952. Abelson, Neva Martin, 32 Woodale Rd. (18)
1926. Adler, Francis Heed, 313 S. 17th St. (3)
1959. Adlin, Albert, 1512 Lindley Ave. (41)
1949. Aegerter, Ernest E., 3400 N. Broad St. (40)
1953. Agerty, Horst A., 1111 N. 63rd St. (31)
1960. Ainsworth, Thomas H., Jr., 888 Glenbrook Ave., Bryn Mawr, Pa.
1936. Alexander, Fay Knight, Germantown Professional Bldg., Greene and Coulter Sts. (44)
1958. Alexander, John Deaver, Phila. General Hospital (4)
1932. Allen, Frederick H., 3915 Henry Ave. (29)
1953. Allman, David B., 104 St. Charles Pl., Atlantic City, N. J.
1935. Alpers, Bernard J., 111 North 49th St. (39)
1930. Appel, Kenneth E., 111 N. 49th St. (39)
1905. Appleman, Leighton Francis, 308 S. 16th St. (2)
1959. Arkless, Henry A., 255 S. 17th St. (3)
1935. Armitage, George L., 400 E. 13th St., Chester, Pa.
1922. Arnett, John H., 2116 Pine St. (3)
1952. Ash, Rachel, 255 S. 17th St. (3)
1952. Aston, Melville J., 2507 S. 21st St. (45)
1944. Atkins, Joseph P., 1201 Knox Rd., Wynnewood, Pa.
1956. Atkinson, John B., Chestnut & Copley Rds., Upper Darby, Pa.
1935. Atlee, John L., Jr., 37 E. Orange St., Lancaster, Pa.
1952. Atlee, William A., 37 E. Orange St., Lancaster, Pa.
1958. Ayella, Alfred S., Jr., 1213 S. Broad St. (47)
1935. Bach, Theodore F., 1900 Rittenhouse Sq. (3)
1942. Bachman, Carl, Univ. of Pa. Hospital (4)
1960. Bacon, Catherine L., 111 N. 49th St. (39)
1937. Bacon, Emily P., Lankenau Medical Bldg. (31)
1960. Bacon, Harry E., 255 S. 17th St. (3)
1958. Baer, Samuel, 5123 N. Broad St. (41)
1959. Baird, Henry Welles, III, 2600 N. Lawrence St. (33)
1952. Baier, Howard N., 3401 N. Broad St. (40)
1952. Baker, Howard W., 3401 N. Broad St. (40)
1946. Baker, Walter W., 255 S. 17th St. (3)
1958. Ball, Simon, 255 S. 17th St. (3)
1958. Ballinger, Walter F., II, 1025 Walnut St. (7)
1957. Baltzell, William Hewson, 1530 Locust St. (2)
1940. Barba, Philip S., 120 Erdenheim Road (18)
1943. Barden, Robert P., 8835 Germantown Ave. (18)
1939. Barnshaw, Harold D., 526 Cooper St., Camden 2, N. J.
1957. Barr, S. Stanley, 255 S. 17th St. (3)
1939. Bartle, Harvey, Jr., 133 S. 36th St. (4)
1932. Batson, Oscar V., 203 DeKalb Sq. (4)
1921. Bauer, Edward L., 5501 Greene St. (44)
1933. Bauer, John T., 312 E. Second St., Moorestown, N. J.

1939. Baumann, Frieda, 2101 Chestnut St. (3)
1930. Beardwood, Joseph T., Jr., 2031 Locust St. (3)
1955. Beckfield, William J., Philadelphia General Hospital, 34th & Curie Ave. (4)
1952. Bedrossian, E. Howard, 2027 Spruce St. (3)
1949. Beecham, Clayton T., 105 School Lane (44)
1935. Beerman, Herman, 255 S. 17th St. (3)
1942. Behrend, Albert, 1018 Melrose Ave. (26)
1945. Behrend, Bernard, 5910 Greene St. (44)
1934. Behrend, Moses, Rittenhouse Claridge, 18th & Walnut St. (3)
1949. Beizer, Lawrence H., 304 S. 19th St. (3)
1930. Belk, William Parks, 433 Owen Rd., Wynnewood, Pa.
1936. Bell, Benjamin Tertius, 1941 Woodland Rd., Abington, Pa.
1956. Beller, Martin Leonard, 1936 Spruce St. (3)
1947. Bellet, Samuel, 2021 Spruce St. (3)
1956. Belmont, Owen, 5723 No. Park Ave. (41)
1959. Berk, Nathaniel G., 1930 Chestnut St. (3)
1941 Bernstein, Mitchell, 2053 S. John Russell Circle
1951. Bernstine, J. Bernard, 255 S. 17th St. (3)
1960. Bernstine, Melvin Lewis, York & Tabor Rds. (41)
1956. Berry, Theodore J., 331 E. Lancaster Ave., Wynnewood, Pa.
1957. Biele, Albert M., 1530 Locust St. (2)
1918. Billings, Arthur E., 2020 Spruce St. (3)
1952. Bird, Gustavus C., Jr., 3401 N. Broad St. (40)
1957. Birdsall, Thomas M., 255 S. 17th St. (3)
1949. Bishop, Edward H., 811 Spruce St. (7)
1933. Bishop, Paul A., Pennsylvania Hospital. (7)
1944. Blady, John V., Parkway House, 2201 Benjamin Franklin Pkwy. (30)
1960. Blake, Alton D., Jr., Bryn Mawr Medical Bldg., Bryn Mawr, Pa.
1952. Blake, Paul O., 273 N. Lansdowne Ave., Lansdowne, Pa.
1958. Blakemore, William S., 3400 Spruce St. (4)
1917. Block, Frank B., A1124 Park Drive Manor (44)
1957. Block, Louis H., 1351 Tabor Rd. (41)
1949. Blumstein, George I., 2039 Delancey St. (3)
1929. Bockus, Henry L., 250 S. 18th St. (3)
1928. Boles, Russell S., Rittenhouse Plaza, 1901 Walnut St. (3)
1923. Bond, Earl D., 111 N. 49th St. (39)
1948. Bookhammer, Robert S., 209 Rittenhouse Claridge (3)
1931. Bortz, Edward Le Roy, 2021 W. Girard Ave. (30)
1936. Bostwick, Delazon Swift, 106 Linwood Ave., Ardmore, Pa.
1928. Bothe, Frederick A., 255 S. 17th St. (3)
1951. Boucot, Katharine R., 3300 Henry Ave. (29)
1947. Bourland, Henry S., 2219 Garret Rd., Drexel Hill, Pa.
1923. Bower, John O., 2008 Walnut St. (3)
1954. Bowers, Paul A., 2035 Locust St. (3)
1942. Bowie, Morris A., Bryn Mawr Medical Bldg., Bryn Mawr, Pa.
1907. Bradley, William Nathaniel, 2414 Knowles Rd., Graylyn Crest, Wilmington 3, Del.
1959. Brady, Luther Weldon, Jr., Hahnemann Hospital, Broad & Race Sts. (2)
1954. Bralow, S. Philip, 3701 N. Broad St. (40)
1942. Branen, William, Whitby & Cypress Aves., Yeadon, Pa.
1921. Bransfield, John W., 2101 Spruce St. (3)
1948. Braun, William, 406 Cooper St., Camden, N. J.
1953. Brav, Solomon S., 5575 N. Park Ave. (41)
1953. Breckenridge, Robert L., Our Lady of Lourdes Hosp., 1600 Haddon Ave., Camden 3, N. J.

1946. Briscoe, Clarence Conway, 811 Spruce St. (7)
1953. Brobeck, John R., Univ. of Pa. School of Medicine (4)
1958. Brody, Henry, Einstein Medical Center, York & Tabor Rds. (41)
1952. Brody, Morris W., 1930 Chestnut St. (3)
1948. Brogan, Edmund J., Thomas Wynne Apartment, Wynnewood, Pa.
1953. Brooke, John A., 1431 Spruce St. (2)
1958. Brooks, Frank P., Hospital of the Univ. of Pa. (4)
1936. Brown, Clark E., Lancaster Ave. & City Line Ave. (31)
1932. Brown, Claude P., 1930 Chestnut St. (3)
1959. Browneller, Ellsworth R., Jefferson Hospital (7)
1939. Brust, Raymond W., 4710 Chester Ave. (43)
1953. Bucher, Robert M., 3401 N. Broad St. (40)
1952. Bumgardner, Heath D., 3701 N. Broad St. (40)
1940. Burnett, W. Emory, 3401 N. Broad St. (40)
1954. Burros, Harry M., 255 S. 17th St. (3)
1941. Butler, Miriam, Watersmeet, Glen Mills, Pa.
1957. Calhoun, John Alfred, Jr., 214 Elm Ave., Swarthmore, Pa.
1958. Cameron, Charles S., 235 N. 15th St. (2)
1928. Campbell, Edward H., 133 S. 36th St. (4)
1952. Campbell, Edward W., Abington Memorial Hospital
1944. Campion, Richard J., Penllyn Rd., Springhouse, Ambler, Pa.
1960. Cancelmo, John B., 5012 Spruce St. (39)
1931. Cantarow, Abraham, 1025 Walnut St. (7)
1952. Cardone, John B., 831 N. 63rd St. (31)
1935. Carey, Lawrence S., 330 S. 9th St. (7)
1931. Cariss, Walter L., 51 N. 39th St. (4)
1956. Carnwath, John Wallace, Summit & Highland Aves., Jenkintown, Pa.
1930. Carpenter, Chapin, 1930 Chestnut St. (3)
1959. Carrington, Elsie R., 3401 N. Broad St. (40)
1917. Carson, John B., Newtown Square, Pa.
1956. Carty, James Byron, 51 Hampden Rd., Upper Darby, Pa.
1956. Casey, Paul R , 8350 Roosevelt Blvd. (15)
1937. Castallo, Mario A., 1621 Spruce St. (3)
1943 Castigliano, S. Gordon, 853 Mt. Pleasant Rd., Bryn Mawr, Pa.
1949. Caswell, H. Taylor, 3401 N. Broad St. (40)
1954. Catenacci, Alfred J., 1417 S. Broad St. (47)
1954. Cathcart, Richard T., 739 S. Broad St. (47)
1957. Cattie, Vincent J., The Benson, E. 207A., Jenkintown, Pa.
1950. Chamberlain, Richard H., 3400 Spruce St.
1939. Chamberlin, George W., Reading Hospital, Reading, Pa.
1900. Chance, Burton, 9 Llanalew Road, Haverford, Pa.
1945. Chance, Burton, Jr., 8236 Germantown Ave. (18)
1958. Channick, Bertram J., 3521 N. Broad St. (40)
1954. Charny, Charles W., 2039 Delancey Pl. (3)
1960. Chirico, Anna-Marie, Hosp. of Univ. of Pa. (4)
1947. Chouké, Kehar S., P. O. Box 447, Kecoughton, Va.
1945. Cianfrani, Theodore, 1930 Chestnut St.
1939. Ciccone, Emmet F., 2021 Murray St.
1960. Clader, Stanley C., 825-A Glenbrook Ave., Bryn Mawr, Pa.
1951. Clagett, Augustus H., Jr., 1618 N. Broom St., Wilmington 6, Del.
1929. Clark, Eliot R., 315 S. 41st St.
1951. Clark, John K., 36th & Spruce Sts. (4)
1947. Clark, Thomas Williams, 9501 Germantown Ave. (18)

1947. Classen, Charles H., Cushman Rd. and Lancaster Ave., Rosemont, Pa.
1958. Closson, Edward W., 2320 S. Broad St. (45)
1910. Cloud, J. Howard, 111 St. Pauls Road, Ardmore, Pa.
1959. Coghlan, William P., 1012 Walnut St. (7)
1957. Cohen, Frank L., 2113 Spruce St. (3)
1949. Cohen, Louis B., 1320 Arrott St.
1953. Cohen, Robert V., 520 Spring Ave., Elkins Park 17, Pa.
1934. Collins, Leon Howard, Jr., 133 S. 36th St.
1943. Colonna, Paul C., 133 S. 36th St.
1949. Conger, Kyril B., 3401 N. Broad St.
1945. Coonel, Pauline, 47 E. Mt. Pleasant Ave.
1930. Cooper, David A., 1520 Spruce St.
1953. Cooper, Donald R., 133 S. 36th St. (4)
1960. Cooper, Edward Sawyer, 450 S. 57th St. (43)
1947. Coppolino, John F., 1807 S. Broad St.
1952. Corbit, John D., Jr., 3717 Chestnut St.
1959. Cormeny, George F., 3818 Chestnut St. (4)
1941. Cornelius, Chalmers E., 119 Summit Ave., Jenkintown, Pa.
1911. Cornell, Walter S., Board of Public Education, Parkway and 21st St.
1914. Corson, Edward F., 136 S. 16th St.
1946. Costello, Thomas J., 131 Pennsylvania Ave., Bryn Mawr, Pa.
1924. Cowan, Alfred, 1930 Chestnut St.
1940. Cowan, Thomas H., 1930 Chestnut St.
1907. Crampton, George S., 2031 Locust St.
1947. Crane, A. Reynolds, 807 Spruce St.
1937. Crane, Martin P., 4701 Pine St. (43)
1952. Crellin, J. Antrim, 1930 Chestnut St.
1955. Crist, Walter A., 211 N. 5th St., Camden, N. J.
1921. Crossan, Edward T., Buttonwood Hall, Conshohocken, Pa.
1937. Crump, Jean, 2101 Chestnut St. (3)
1959. Cullen, Milton L., 1321 W. Tabor Rd. (41)
1934. Custer, R. Philip, 643 Moreno Road, Narberth, Pa.
1958. D'Alonzo, Walter A., 1647 S. 17th St. (45)
1938. Dannenberg, Arthur M., 235 S. 15th St.
1950. Dannenberg, Arthur M., Jr., Henry Phipps Institute, 7th & Lombard Sts. (47)
1951. Daugherty, Earl A., 2025 W. Girard Ave.
1953. Davie, John H., 269 S. 19th St. (3)
1947. Davis, C. Nelson, 133 South 36th St.
1936. Davis, David M., 255 S. 17th St.
1957. Davis, John Evan, Eastern Pa. Psychiatric Institute, Henry Ave. & Abbottsford Rd. (29)
1951. Davis, J. Wallace, 135 S. 18th St.
1937. Davis, Perk Lee, P. O. Box 701, Paoli, Pa.
1935. Deaver, J. Montgomery, Lankenau Medical Bldg. (31)
1957. Decker, John Paul, Pennsylvania Hospital (7)
1957. Dees-Porch, Frances, Glendale & Chestnut Sts., Upper Darby, Pa.
1947. Dehne, Theodore L., Adams Avenue and Roosevelt Blvd.
1935. Deibert, Irvin Elmer, 538 Cooper St., Camden, N. J.
1958. Deitz, George W. III, 1146 Arrott St. (24)
1923. De Long, Perce, 142 Princeton Rd., Bala-Cynwyd, Pa.
1955. De Long, Samuel L., 860 Lancaster Ave., Bryn Mawr, Pa.
1952. DeLuca, Charles Q., 255 S. 17th St.
1952. De Orsay, Ralph H., 1241 Lindale Ave., Drexel Hill, Pa.
1951. De Palma, Anthony F., 248 S. 21st St.

1959. DeTuerk, John J., 1930 Chestnut St. (3)
1928. Dewees, A. Lovett, Glen Mills, Del. Co., Pa.
1959. Dickens, Helen O., 1512 W. Oxford St. (21)
1958. Dickstein, Benjamin, 6810 Castor (24)
1956. Dietrich, Herbert James, Jr., 1830 Delancey Place (3)
1952. Digilio, Victor A., 2200 St. James Place.
1960. Dinon, Louis R., 330 S. 9th St. (7)
1953. Dixon, James P., Antioch College, Yellow Springs, Ohio.
1920. Doane, Joseph C., 617 W. Hortter St.
1948. Dohan, Francis Curtis, 80 Princeton Road, Cynwyd, Pa.
1954. Donaldson, James B., 1901 Walnut St. (3)
1946. Donnelly, Andrew J., 33rd and Powelton Ave.
1933. Donnelly, Joseph C., 6832 Ogontz Ave.
1937. Donnelly, Robert T. M., 5205 N. Broad St. (41)
1954. Downing, Daniel F., 8864 Norwood Ave. (18)
1952. Drayer, Calvin S., 111 N. 49th St.
1949. Dripps, Robert D., 3400 Spruce St.
1935. Duane, William, Jr., 2109 Spruce St. (3)
1956. Dubin, Isadore N., Woman's Medical College (29)
1944. Dublin, George J., 1930 Chestnut St.
1944. Dugger, John H., Episcopal Hospital (25)
1935. Duncan, Garfield G., 330 S. 9th St.
1951. Dunne, Francis S., 133 S. 36th St.
1953. Dupler, Donald A., 4028 Walnut St. (4)
1942. Durant, Thomas M., 3401 N. Broad St.
1947. Durkin, John Keenan, Bryn Mawr Medical Bldg., Bryn Mawr, Pa.
1942. Dyer, W. Wallace, Bryn Mawr Medical Bldg., Bryn Mawr, Pa.
1935. Eads, John T., 607 E. Durham St. (19)
1936. Easby, Mary Hoskins, Mansion & Marvine Aves., Drexel Hill
1948. Eaton, Francis H., 4007 Chestnut St.
1937. Edeiken, Joseph, 2130 Delancey Pl.
1944. Eger, Sherman A., 2029 Delancey St.
1944. Ehrich, William E., 540 W. Hortter St.
1956. Eiman, John W., Abington Memorial Hospital, Abington, Pa.
1953. Eisenberg, Isadore J., 1520 N. 2d St., Harrisburg, Pa.
1959. Eisenhower, James S. D., Jr., 2704 Pacific Ave., Wildwood, N. J.
1958. Eisman, Sylvan H., 3600 Spruce St. (4)
1946. Elfman, Louis Kenneth, 6330 Lebanon Avenue.
1959. Elias, Elmer J., 474 Greenwood Ave., Trenton, N. J.
1949. Elkinton, J. Russell, Oak Lane, Moylan, Pa.
1957. Ellis, Richard A., 269 S. 19th St. (3)
1955. Ellis, Samuel, 541 S. 46th St. (43)
1939. Ellis, Van Mashburn, 1528 Spruce St. (2)
1928. Ellison, Richard T., 8601 Stenton Ave.
1936. Ellson, J. Vernon, Glendale Road & Chestnut St., Upper Darby, Pa.
1904. Elmer, Walter G., 1801 Pine St.
1937. Elsom, Kendall A., Maloney Clinic Bldg., 36th & Spruce Sts. (4)
1934. Ely, William C., 3912 Chestnut St.
1932. Engel, Gilson C., Lankenau Medical Bldg. (31)
1945. English, O. Spurgeon, 3401 N. Broad St. (4)
1942. Erb, William H., 133 S. 36th St.
1957. Erdman, William James, II, 3400 Spruce St. (4)
1950. Ersner, Matthew S., 1915 Spruce St.

1957. Etzl, Michael M., 9025 Frankford Ave. (14)
1954. Evans, William W., Box 2, Bryn Mawr, Pa.
1948. Everts, Glenn S., 5515 Wissahickon Ave., Apt. D-403.
1955. Eynon, Harold K., Route 70 at East Gate, Barclay Farm, Haddonfield, N. J.
1946. Farell, David M., 1912 Spruce St.
1903. Farr, Clifford B., Railroad Ave. & County Line Rd., Bryn Mawr, Pa.
1945. Farrar, George Elbert, Jr., 528 Scott Rd., Gladwyne, Pa.
1953. Farrell, Harry L., 1930 Chestnut St. (3)
1930. Farrell, John T., Jr., 255 S. 17th St.
1935. Ferguson, Lewis Kraeer, 133 S. 36th St.
1936. Fetter, Ferdinand, 322 S. 21st St.
1945. Fetter, John S., 842 Worrell Rd., Jenkintown, Pa.
1935. Fetter, Theodore R., 255 S. 17th St.
1924. Fewell, Alexander G., 1924 Pine St.
1952. Fields, Harry, 133 S. 36th St.
1959. Fineberg, Charles, 255 S. 17th St. (3)
1955. Finestone, Albert J., 2039 Pine St. (3)
1960. Finkbiner, Rodman B., 811 Spruce St. (7)
1943. Finkelstein, Arthur, 480 Latch's Lane, Merion, Pa.
1955. Finkelstein, David, 1930 Chestnut St. (3)
1955. Finley, John K., 527 Welsh St., Chester, Pa.
1954. Finn, Joseph L., 7109 Rising Sun Ave. (11)
1947. First, Arthur, 1714 Spruce St.
1960. First, Howard E., 1714 Spruce St. (3)
1954. Fischer, Carl C., Girard College (21)
1950. Fischer, H. Keith, 100 W. Coulter St. (44)
1958. Fisher, Robert M., 118 Airdale Rd., Rosemont, Pa.
1945. Fiske, Frederick A., Bryn Mawr Ave. & Summit Lane, Bala-Cynwyd, Pa.
1956. Fite, Franklin K., Germantown Hospital (44)
1952. Fitts, William T., Jr., 3400 Spruce St.
1928. Fitz-Hugh, Thomas, Jr., 2016 Delancey Pl.
1952. Flexner, Louis B., Univ. of Pa. School of Medicine (4)
1928. Flick, John B., 819 Black Rock Rd., Gladwyne, Pa.
1954. Flick, John B., Jr., Bryn Mawr Medical Bldg., Bryn Mawr, Pa.
1952. Flinn, Lewis B., 503 Delaware Ave., Wilmington, Del.
1939. Flippin, Harrison F., Lankenau Hospital (30)
1957. Forman, Simon B., 255 S. 17th St. (3)
1957. Fornwalt, George R., Brandon Road & Ludlow St., Upper Darby, Pa.
1954. Forster, H. Walter, Jr., 37 S. 20th St. (3)
1960. Foulger, John H., 601 Rockwood Rd., Wilmington, Del.
1941. Fox, C. Calvin, 1806 Spruce St.
1957. Frankel, Donald S., 255 S. 17th St. (3)
1959. Frankel, Kalman, 111 N. 49th St. (39)
1955. Frayer, William C., 313 S. 17th St. (3)
1941. Frazier, William Doane, 419 Gilpin Rd., Narberth, Pa.
1952. Freed, Herbert, 255 S. 17th St. (3)
1956. Freedman, Joseph T., 8-A Rittenhouse Plaza (3)
1958. Freiwald, Milton J., 1530 Spruce St. (2)
1953. Fried, Paul H., 1812 Spruce St. (3)
1955. Friedenberg, Zachary B., 133 S. 36th St. (4)
1951. Friedman, Paul Sigmund, 1422 Chestnut St.
1958. Frisch, Frederick, 40 Morris Ave., Bryn Mawr, Pa.
1933. Fritch, James Scott, 269 S. 19th St.

1937. Fritz, Herbert H., Pennswood Rd., Bryn Mawr, Pa.
1953. Fruchter, Joseph M., 2200 Benjamin Franklin Parkway, Park Towne, North (30)
1940. Fry, Kenneth E., 1719 Rittenhouse Sq.
1935. Fry, Wilfred Eyles, 1930 Chestnut St.
1937. Furlong, Thomas F., Jr., Times Medical Building, Ardmore, Pa.
1954. Gambescia, Joseph M., 1422 Race St. (3)
1935. Gammon, Geo. D., Univ. of Pa. Hospital (4)
1951. Garlichs, Richard W., 216 N. Manoa Road, Havertown, Pa.
1931. Garner, Vaughn C., Germantown Professional Building (44)
1953. Garnet, James D., 807 Spruce St. (7)
1959. Gartland, John J., 269 S. 19th St. (3)
1950. Garvin, Eugene J., 533 S. 46th St. (43)
1953. Geckeler, Edwin O., 269 S. 19th St. (3)
1952. Gefter, William I., 366 Penn Rd., Wynnewood, Pa.
1935. Geist, Donald C., 1930 Chestnut St.
1955. Gelfand, David, 1722 Pine St. (3)
1954. German, George B., 429 Cooper St., Camden, N. J.
1941. Gershon-Cohen, J., 255 S. 17th St. (3)
1959. Gerson, Irvin M., 1561 E. Tulpehocken St.
1955. Gettes, Bernard C., 128 Overhill Rd., Cynwyd, Pa.
1934. Gibbon, John H., Jr., 1025 Walnut St.
1939. Gibson, Glen Gregory, 2031 Locust St.
1944. Gifford, Edward S., Jr., 1913 Spruce St.
1954. Gilbert, Philip D., Cooper Hospital, Camden, N. J.
1954. Giletto, Basil J., 2020 Locust St. (3)
1920. Gill, A. Bruce, 1603 Normandy Drive, Mt. Dora, Fla.
1956. Gill, Robert J., 801 Spruce St. (7)
1927. Gilmour, William R., 6616 Woodland Ave. (42)
1952. Gilpin, Sherman F., Jr., 1023 Buery Building (40)
1949. Ginsburg, Isadore W., 3401 N. Broad St. (40)
1931. Giordano, Anthony A. S., 129 Carpenter Lane (47)
1958. Girsh, Leonard S., 3701 N. Broad St. (40)
1954. Gislason, Gerhard J., Medical Arts Bldg. (2)
1954. Glover, Robert P., 269 S. 19th St. (3)
1956. Goldberg, Harry, 249 N. Broad St. (2)
1933. Goldburgh, Harold L., 1932 Spruce St.
1935. Goldsmith, N. Ralph, 1351 Tabor Rd.
1958. Golub, Leib J., Medical Arts Bldg. (2)
1949. Gopadze, Illarion I., 255 S. 17th St. (3)
1956. Goracci, Armando F., 2040 Poplar St. (30)
1937. Gordon, William, 5345 Spruce St.
1956. Gouley, Benjamin, 5577 N. Park Ave. (41)
1941. Gouterman, Joseph I., 1930 Chestnut St.
1957. Grahn, Henry Victor, 5132 Chester Ave. (43)
1926. Grant, Francis Clark, 750 Germantown Pike, Lafayette Hill, Pa.
1958. Greco, Toby A., 2506 S. 20th St. (45)
1940. Greene, Lloyd B., 803 Spruce St. (7)
1952. Greening, Roy R., Jefferson Hospital (7)
1958. Greenspan, Benjamin, 1319 W. Tabor Rd. (41)
1955. Greenstein, Raphael H., 1710 Pine St. (3)
1934. Griffith, John Q., Jr., 6 N. Fredericksburg Ave., Margate, N. J.
1945. Griffiths, John E., Mermont Apartments, Bryn Mawr, Pa.
1941. Groff, Robert A., Univ. of Pa. Hospital (4)

1952. Grotzinger, Paul J., 230 N. Broad St. (2)
1952. Grove, D. Dwight, 230 N. Broad St.
1945. György, Paul, Univ. of Pa. School of Medicne (4)
1935. Hadden, Samuel B., 250 S. 18th St. (3)
1951. Hafkenschiel, Joseph H., Jr., 302 Lankenau Medical Bldg. (31)
1945. Hahn, George A., 255 S. 17th St.
1935. Haines, Harlan F., 134 S. State Rd., Upper Darby, Pa.
1955. Hallahan, John D., 104 W. Front St., Media, Pa.
1951. Halltt, Joseph W., 1001 Medical Arts Bldg., 16 & Walnut Sts.
1939. Hamblock, Leonard C., 1625 Spruce St.
1959. Hampton, Louis J., 1025 Walnut St. (7)
1954. Hand, B. Marvin, 269 S. 19th St. (3)
1938 Hand, John G , 1724 Pine St.
1947. Hanes, William James, 218 E. Beechtree Lane, Wayne Pa.
1958. Hanlon, John J., 519 City Hall Annex (7)
1950. Hansen, A. Victor, 3401 N. Broad St. (40)
1957. Harasym, Emil L., 952 N. Franklin St. (23)
1956. Harbert, Frederick, Jefferson Hospital (7)
1952. Harer, W. Benson, State Rd. & Rogers Ave., Bywood. Pa.
1951. Harkins, Herbert P., 1930 Chestnut St. (3)
1959. Harris, James S. C., 5401 Wayne Ave. (44)
1932. Harris, Stanley E., 229 Maple Ave., Delanco, N. J.
1948. Harris, T. N., 5112 Woodbine Ave. (31)
1929. Harrison, Francis G., 1900 Spruce St.
1926. Hartmann, Fred L., 1914 Pine St.
1946. Harvey, Edith E., 406 York Rd., Jenkintown, Pa.
1947. Harvey, Rolfe Marsh, 669 Mill Rd., Villanova, Pa.
1935. Haskell, Benjamin F., 1427 Spruce St.
1946. Hatfield, C. Alexander, 330 S. 9th St.
1958. Haupt, George J., 1012 Walnut St. (7)
1960. Hausman, David, H., Pennsylvania Hospital, 8th & Spruce Sts. (7)
1947. Havens, Walter Paul, Jr., 300 Cherry Lane, Wynnewood, Pa.
1947. Hawthorne, Herbert Reid, 255 S. 17th St. (3)
1952. Hayllar, Benjamin L., 803 Spruce St. (7)
1957. Hedges, Thomas R., Jr., 1711 Rittenhouse St. (3)
1946. Hendrickson, Frank O., 140 N. Rolling Rd., Springfield, Pa.
1953. Henny, George C., 3400 N. Broad St. (40)
1944. Herbut, Peter A., Jefferson Medical College Hospital (7).
1954. Herron, James R., 1486 Haddon Ave., Camden 3, N. J.
1957. Hess, Catherine B., 4 W. Mt. Pleasant Ave. (19)
1924. Hewson, William, 1530 Locust St. (2)
1949. Heyl, W. Meredith, 100 W. Coulter St.
1956. Hildreth, Eugene A., University of Penna. Hospital (4)
1952. Hinkson, DeHaven, 329 N. 40th St.
1924. Hirst, John C., 2d., 500 N. 20th St.
1943. Hitschler, William J., Bethlehem Pike & Summit (18)
1944. Hneleski, Ignatius S., 802 S. 48th St.
1943. Hockaday, Agnes, 316 Shadeland Ave., Drexel Hill, Pa.
1939. Hodes, Philip J., Jefferson Medical College (7)
1947. Hodges, John H., 1025 Walnut St.
1959. Hoffman, Francis H., 3401 N. Broad St. (40)
1948. Hoffman, George L., Jr., 133 S. 36th St.
1954. Hollander, George, 3500 Vista St. (36)

1949. Hollander, Joseph L., 36th & Spruce Sts. (4)
1932. Hollingsworth, I. Pemberton, 411 N. Walnut St., West Chester, Pa.
1951. Hollis, Charles B., 28 W. School Lane (44)
1952. Holloway, Edward E., 1739 W. Montgomery Ave.
1949. Hopkins, Henry U., Garden Court Apts., 47th & Pine Sts.
1953. Horan, Charles A., 734 N. 63rd St. (31)
1946. Horan, Gerald W., 5819 Chester Ave.
1947. Horwitz, Orville, Hospital of University of Pa. (4)
1950. Houlihan, Carl T., 728 S. 60th St.
1944. Houlsel, Edmund L., 255 S. 17th St.
1928. Houser, Karl Musser, 2035 Delancey Pl.
1958. Howard, John M., 230 N. Broad St. (2)
1948. Howland, Alvin Wilcox, 255 S. 17th St.
1946. Howson, John Yeatts, 316 Lancaster Ave., Wayne, Pa.
1951. Hubbard, John P., University of Penna. School of Medicine (4)
1947. Huber, John Franklin, Temple University School of Medicine (40)
1937. Hughes, Joseph, 111 N. 49th St.
1939. Hughes, P. Boland, 419 Hillbrook Rd., Bryn Mawr, Pa.
1951. Hundley, J. Warren, 3818 Chestnut St.
1954. Hunsicker, William C., Jr., 255 S. 17th St. (3)
1946. Hunt, William T., Jr., 6 Penn Center Plaza (3)
1921. Hunter, Robert John, 928 N. 63rd St. (31)
1952. Hyman, Harold L., 3401 N. Broad St. (40)
1950. Imbriglia, Joseph E., 329 Shadeland Ave., Drexel Hill, Pa.
1952. Imperiale, C. Charles, 1331 Pine St.
1949. Ingraham, Norman R., Jr., Stenton and Whitemarsh Aves.
1957. Isaacson, Howard, Haverford Ave. & Drexel Rd.
1951. Isard, Harold J., Mt. Sinai Hospital, 5th & Reed Sts.
1951. Israel, Harold L., 304 S. 19th St. (3)
1947. Israel, S. Leon, 2116 Spruce St.
1952. Iverson, Preston C., 1930 Chestnut St.
1932. Jackson, Chevalier L., 3401 N. Broad St. (40)
1934. Jacobs, Maurice, 1831 Delancey Place.
1947. Jaeger, Rudolph, Jefferson Medical College Hospital (7)
1952. Janton, O. Henry, 2008 Walnut St. (3)
1941. Jeffers, William A., University of Pa. Hospital (4)
1960. Jenson, William K., 330 S. 9th St. (7)
1942. Johnson, Julian, 3400 Spruce St. (4)
1959. Johnson, Robert G., 1012 Walnut St. (7)
1938. Johnson, Thomas A., 135 S. 18th St. (3)
1952. Jonas, Karl C., 2601 Parkway.
1957. Jordan, Luke W., 1486 Haddon Ave., Camden 3, N. J.
1957. Kacher, Leon, 2037 Pine St. (3)
1936. Kain, Thomas M., 403 Cooper St., Camden, N. J.
1957. Kane, Sydney H., 3458 Cottman Ave. (49)
1948. Kaplan, Louis, 2040 Pine St.
1938. Kasper, Kelvin A., 135 S. 18th St.
1958. Kasser, Max D., 37 S. 20th St. (3)
1945. Katz, G. Henry, 111 N. 49th St.
1958. Katz, Jacob, Medical Arts Bldg. (2)
1941. Kauffman, M. Luther, Medical Arts Bldg., Jenkintown, Pa.
1947. Kay, Calvin Frederick, Univ. of Pa. Hospital (4)
1954. Kaye, Robert, Children's Hospital, 1740 Bainbridge St. (46)

1947. Keefer, George Pfahler, 136 S. 16th St. (2)
1949. Keiserman, Joseph, 5460 Baltimore Ave.
1959. Keitel, Hans G., 1025 Walnut St. (7)
1935. Kelly, George F. J., N.E. Cor. 20th and Chestnut Sts.
1932. Kelly, Herbert T., 1900 Spruce St.
1941. Kennedy, Patrick J., 32 Hampden Rd., Upper Darby, Pa.
1948. Kern, Franklin Moore, 903 Nicholson Rd., Wynnewood, Pa.
1921. Kern, Richard A., Temple University Hospital (40)
1935. Keyes, Baldwin L., 2031 Locust St.
1930. Kimbrough, Robert A., Jr., 807 Spruce St.
1936. King, Orville C., 330 S. 9th St.
1958. Kirby, Charles K., 3400 Spruce St. (4)
1952. Kirshner, Jacob J., 1930 Chestnut St.
1960. Kitchell, J. Roderick, 3719 Chestnut St. (4)
1920. Klauder, Joseph V., 1934 Spruce St.
1920. Klein, Thomas, 250 S. 18th St.
1952. Kleinbart, Morris, 1922 Pine St.
1954. Kligman, Albert M., 36th & Spruce Sts. (4)
1934. Kline, Oram R., 514 Cooper St., Camden, N. J.
1959. Kline, Oram R., Jr., 524 Cooper St., Camden, N. J.
1948. Klingensmith, Paul O., 133 S. 36th St.
1958. Klingensmith, Walter C., 3600 Spruce St. (4)
1956. Klinghoffer, June F., 5501 Green St. (44)
1932. Klopp, John W., Gwynedd Valley, Pa.
1919. Knipe, Norman L., 602 Washington Lane, Jenkintown, Pa.
1960. Knopf, Carl L., 5312 Spruce St. (39)
1960. Knorr, John K., 3rd, Lankenau Medical Bldg. (31)
1959. Knowles, Harry J., 2029 Delancey St. (3)
1945. Kobler, H. B., 658 N. 63rd St.
1959. Koiwai, Eichi Karl, 235 N. 15th St. (2)
1914. Kolmer, John A., Cynwyd, Pa.
1957. Koltes, John A., Jefferson Hospital, 14th Annex, 10th & Sansom Sts. (7)
1936. Konzelmann, Frank Williamson, Shore Memorial Hosp., Somer's Point, N. J.
1949. Koop, C. Everett, 1740 Bainbridge St.
1952. Kornblueh, Igho H., Welsh Rd., & Verree Rd. (15)
1958. Kovach, Coleman W., 2031 Locust St. (3)
1941. Krall, J. Thomas, 1927 Spruce St.
1948. Kramer, David W., 2007 Pine St.
1954. Krasnoff, Sidney O., Tabor Medical Bldg. (41)
1944. Krauss, Frederick Harold, 16th & Walnut Sts.
1952. Kravitz, Charles H., 626 Ashbourne Rd., Elkins Park, Pa.
1949. Kressler, Robert J., 330 S. 9th St.
1941. Krewsen, William E., 3rd., 1930 Chestnut St.
1914. Krumbhaar, Edward B., P. O. Box 4056 (18)
1947. Kuhlenbeck, Hartwig, Woman's Medical College.
1947. La Boccetta, Alfred Charles, Phila. General Hospital, 34th St. & Curie Ave. (4)
1952. Lachman, John W., 3401 N. Broad St. (40)
1949. La Clair, Charles H., Jr., 1021 W. Main St., Norristown, Pa.
1952. Lafferty, Henry D., 37 S. 20th St.
1951. Lame, Edwin L., 51 N. 39th St.
1950. Lamont, Austin, 3400 Spruce St. (4)
1946. Lampe, William T., 4207 Tyson Ave.

1952. Lang, Warren R., 1012 Walnut St. (7)
1941. Langner, Paul H., Jr., 1208 Edmonds Ave., Drexel Hill, Pa.
1945. Lansbury, John, 3401 N. Broad St. (40)
1926. Laws, George M., 1907 Spruce St.
1936. Leaman, William G., Jr., Presidential Apts: Adams House B-909.
1950. Learner, Norman, 3701 N. Broad St. (40)
1920. Leavitt, Frederic Headley, 1527 Pine St.
1957. Lee, Charles Trumbull, Jr., 1 Summit St. (18)
1941. Leberman, Paul R., 136 S. 16th St.
1942. Lehman, James A., The Stafford House, Chelten & Wissahickon Ave. (44)
1952. Lehman, J. Stauffer, 230 N. Broad St.
1951. Leivy, Frank E., 1321 Spruce St.
1944. Lell, William A., 333 S. 18th St. (3)
1935. Lemmon, William T., 133 S. 36th St.
1943. Leopold, Irving H., 1711 Rittenhouse Sq. (3)
1955. Leopold, Robert L., 269 S. 19th St. (3)
1944. Lettiere, Anthony J., 425 E. State St., Trenton, N. J.
1933. Levering, J. Walter, Abington Memorial Hospital, Abington, Pa.
1959. Levick, Leonard J., 1300 E. Cliveden St. (19)
1958. Levine, Samuel, 7100 N. 19th St. (38)
1958. LeWinn, Edward B., 1351 Devereaux Ave. (11)
1915. Lewis, Fielding O., Providence Road, Media, Pa.
1938. Lewis, James P. 3815 Chestnut St.
1960. Lewis, David H., Philadelphia General Hosp. (4)
1955. Lieberman, George E., 2019 Pine St. (3)
1956. Likoff, William, 249 N. Broad St. (2)
1940. Limberger, William A., 301 S. Church St., West Chester, Pa.
1958. Lin, David Y. P., 2228 S. Broad St. (45)
1938. Lindauer, M. August, 133 S. 36th St.
1956. Lindquist, John N., 422 Sabine Ave., Wynnewood, Pa.
1927. Lindsey, Walter H., 325 Callowhill St., Perkasie, Pa.
1936. Lintgen, Charles, 1930 Chestnut St.
1958. Lipschutz, Arthur, 7974 Fayette St. (19)
1959. Lipshutz, Herbert, 255 S. 17th St. (3)
1953. Lipsius, Edward I., 319 S. 16th St. (3)
1945. Lisker, Samuel, 255 S. 17th St. (3)
1959. Little, Ralph B., 111 N. 49th St. (39)
1944. Livezey, Mary M., 7200 Cresheim Rd.
1936. Llewellyn, Thomas H., 910 N. 63rd St.
1907. Lodholz, Edward, The Fairfax, 43rd & Locust Sts.
1958. Loftus, Thomas A., 1025 Walnut St. (7)
1951. Long, Joseph P., 1930 Chestnut St.
1935. Long, William L., 2038 Locust St. (3)
1931. Longaker, Edwin P., 41 E. Montgomery Ave., Ardmore, Pa.
1951. Lorber, Stanley H., 3701 N. Broad St. (40)
1960. Lovett, B. Frank, 618 Benson St., Camden, N. J.
1936. Lucchesi, Pascal Francis, 601 E. Gorgas Lane
1960. Lucine, Albert A., 345 S. 19th St. (3)
1932. Lukens, Francis D. W., Univ. of Pa. Hospital (4)
1939. Luongo, Romeo A., 2054 Locust St.
1947. Lurie, Max B., Henry Phipps Institute, 7th and Lombard Sts.
1951. Luscombe, Herbert A., 136 S. 16th St.

1952. Lutman, Frank C., 100 W. Coulter St.
1950. Lynch, J. Edward, 23 E. Wynnewood Rd., Wynnewood, Pa.
1953. Lyons, John W., 255 S. 17th St. (3)
1952. McCabe, Edward S., 136 S. 16th St. (2)
1932. McCahey, James F., 222 S. 19th St. (3)
1958. McClenahan, John L., 39 E. Chestnut Hill Ave. (18)
1935. McClenahan, William U., 33 East Chestnut Hill Ave., Chestnut Hill (18)
1953. McCloskey, Joseph F., Jefferson Hospital. (7)
1955. McClure, Carroll R., 17 S. Church St., W. Chester, Pa.
1957. McConnell, Edward L., Jr., 2230 S. Broad St. (45)
1934. McCouch, Grayson P., Univ. of Pa. School of Medicine (4)
1938. McCrea, Lowrain E., 1930 Chestnut St.
1958. McCune, Wallace G., Germantown Hospital (44)
1937. McCutcheon, Morton, West Hill, Wallingford, Vt.
1942. McDonald, P. Robb, 1930 Chestnut St.
1953. McDonnell, William V., 1025 Walnut St. (7)
1952. McElroy, Robert C., 133 S. 36th St.
1950. McFadden, William M., 1187 E. Washington Lane
1949. McGavic, John S., 601 Montgomery Ave., Bryn Mawr, Pa.
1945. McGee, Lemuel Clyde, Hercules Power Company, Wilmington, Del.
1954. McGehee, Edward H., 15 E. Highland Ave. (18)
1952. McGlade, Thomas H., 719 Cooper St., Camden, N. J.
1956. McGrath, Raymond J., 1720 Spruce St. (3)
1959. McKeown, John J., 1012 Walnut St. (7)
1933. McLaughlin, James S., 330 S. 9th St.
1924. McMillan, Thomas M., 1901 Walnut St. (3)
1924. McPhedran, F. Maurice, Germantown Hosp., Penn and Chew Sts.
1955. McStravog, Lawrence J., 6910 Market St., Upper Darby, Pa.
1954. MacFadyen, Bruce V., 135 S. 18th St. (3)
1943. Macfarlan, Douglas, 1805 Chestnut St.
1932. Macfarlane, Catherine, 136 S. 16th St.
1947. Machella, Thomas E., Univ. of Pa. Hospital (4)
1950. Mackmull, Gulden, Greene & Coulter Sts. (44)
1949. MacNeal, Perry Scott, 330 S. 9th St.
1939. Macneill, Norman M., 5807 Chew St.
1951. Mac Neish, W. J., Medical Arts Bldg., 16th & Walnut Sts.
1955. Macy, Dorothy, Jr., 3 Beechwood Rd., Pine Ridge, Media, R. D. 3, Pa.
1957. Madow, Leo, 111 N. 49th St. (39)
1935. Maeder, LeRoy M. A., 1910 Rittenhouse Sq.
1952. Mahoney, J. Francis, 250 S. 18th St.
1959. Mandel, Martin M., 255 S. 17th St. (3)
1942. Manges, Lewis C., Jr., 2001 Delancey Place (3)
1954. Manges, Willis E., Methodist Hospital, Broad & Wolf Sts. (48)
1959. Maniglia, Rosario, 230 N. Broad St. (2)
1949. Manlove, Francis R., 406 Surburban Sq., Ardmore, Pa.
1936. Mann, Bernard, 2019 Pine St.
1960. Manning, Valentine R., 3336 Aldine St. (36)
1956. Manstein, George, 1351 Tabor Rd. (41)
1953. Marbach, A. Herbert, 1307 Tabor Rd. (41)
1948. Marden, Philip Ayer, 1910 Spruce St. (3)
1937. Margolies, Alexander, 1351 Tabor Rd.
1958. Marino, Daniel J., 269 S. 19th St. (3)

1950. Mark, George E., 3401 N. Broad St. (40)
1950. Marshall, E. Wayne, Jr., 1520 Spruce St.
1951. Martin, William L., Hahnemann Hospital.
1952. Martucci, Albert A., 1460 E. Cheltenham Ave.
1953. Marx, Halvey E., 282 N. Lansdowne Ave., Lansdowne, Pa.
1953. Massey, Franklin C., 136 S. 16th St. (2)
1935. Matthews, Robert A., 1025 Walnut St. (7)
1939. May, Hans, 255 S. 17th St.
1951. Mayock, Robert L., 3600 Spruce St. (4)
1958. Mays, Ralph Whiteman, 154 W. Tulpehocken St. (44)
1952. Mecray, Paul, Jr., 405 Loucroft Ave., Haddonfield, N. J.
1951. Medinger, Frederick G., 1941 Woodland Road, Abington, Pa.
1959. Medoff, Joseph, 5400 Wynnefield Ave. (31)
1955. Melnick, Theodore, 1152 N. 63rd St. (31)
1941. Mendell, Theodore H., 2023 Spruce St.
1951. Mendelssohn, Edwin, 1301 Tabor Rd. (41)
1943. Meranze, David R., 1031 Lakeside Ave.
1954. Mertens-Roesler, Elizabeth, 224 W. School House Lane (44)
1956. Merves, Louis, 1930 Chestnut St. (3)
1955. Mervine, Thomas B., 133 S. 36th St. (4)
1959. Metzger, Harry N., 1815 Pine St. (3)
1955. Meyer, Eugene A., 1438 Mt. Ephraim Ave., Camden, N. J.
1937. Meyer, George Phillip, 410 Haddon Ave., Camden, N. J.
1956. Miller, Bernard Joseph, 340 S. 15th St. (3)
1935. Miller, Ford A., 4016 Chestnut St.
1939. Miller, Malcolm W., Lankenau Medical Bldg. (31)
1939. Miller, Merle M., 6013 Greene St.
1932. Miller, M. Valentine, 114 W. Phil-Ellena St.
1921. Miller, T. Grier, 133 S. 36th St.
1955. Miller, William H., Fitzgerald Mercy Hospital, Darby, Pa.
1952. Minehart, John R., 4821 Germantown Ave.
1952. Mintz, S. S., 1930 Chestnut St. (3)
1937. Missett, Joseph Vincent, Jr., 2031 Locust St.
1904. Mitchell, Charles Franklin, 2003 Pine St.
1950. Mitchell, John McK., Univ. of Pa. School of Medicine (4)
1952. Mitchell, Robert McNair, 330 S. 9th St.
1959. Mitterling, Robert C., Chestnut St. & Glendale Rd.; Upper Darby
1932. Mohler, Roy W., 1806 Spruce St.
1936. Montgomery, Hugh, 119 Glenn Road, Ardmore, Pa.
1936. Montgomery, John B., 1930 Chestnut St.
1932. Montgomery, Thaddeus L., 2031 Locust St.
1935. Moore, John Royal, 3401 N. Broad St.
1947. Moore, Matthew Thibaud, 1813 Delancey Pl.
1958. Moore, Samuel R., Jr., 1600 Arch St. (1)
1958. Morani, Alma D., 2665 Midvale Ave. (29)
1936. Morgan, David R., Jefferson Medical College
1944. Morris, Harold H., Villa Nova, Pa.
1945. Morris, I. Paul, 1939 Cheltenham Ave.
1957. Moyer, David G., 701 W. Main St., Lansdale, Pa.
1959. Moyer, John H., 230 N. Broad St. (2)
1941. Mucklé, Craig Wright, 330 S. 9th St. (7)
1929. Mudd, Stuart, Department of Bacteriology, Univ. of Pa. School of Medicine.

1960. Mulberger, Robert D., 1930 Chestnut St. (3)
1949. Mulholland, Stanford W., 22nd & Parkway.
1935. Mullen, Carroll Richard, 2025 Locust St.
1934. Mullen, Edward A., 472 Roxborough Ave.
1930. Murphy, Douglas P., 601 S. Bowman Ave., Merion Station, Pa.
1953. Murphy, Edward J., Bryn Mawr Medical Bldg., Bryn Mawr, Pa.
1958. Murphy, John J., 3600 Spruce St. (4)
1959. Murray, Edwin N., 130 N. Broadway, Camden, N. J.
1955. Murtagh, Frederick, 3701 N. Broad St. (40)
1951. Myers, David, 3701 N. Broad St. (40)
1955. Nachod, Grace R., 5501 Greene St. (44)
1945. Naide, Meyer, 2034 Spruce St.
1951. Naidoff, David, 3500 Tudor St. (36)
1950. Nardone, Anthony A., 912 S. 49th St.
1959. Neal, Hunter, S., 406 Lankenau Medical Bldg., (31)
1958. Nealon, Thomas F., Jr., 1025 Walnut St. (7)
1948. Neese, Paul H., 17 Derwen Road, Cynwyd, Pa.
1936. Nelson, Guy M., 255 S. 17th St.
1943. Nelson, Waldo E., 615 Moreno Rd., Narberth, Pa.
1955. Nemir, Paul, Jr., 255 S. 17th St. (3)
1905. Newcomet, William S., 3501 Baring St.
1938. Newton, Zachariah B., 601 E. Sedgwick St.
1935. Nicholson, Jesse Thompson, 1740 Bainbridge St. (46)
1960. Nicholson, John W., III, 115 Chestnut St., Morrestown, N. J.
1947. Noone, Ernest L., 4501 Cedar Lane, Drexel Hill, Pa.
1905. Norris, Charles C., Darby and Goshen Roads, Bryn Mawr, Pa.
1954. Norris, Charles M., 3401 N. Broad St. (40)
1905. Norris, George W., 250 S. 18th St. (3)
1938. Norris, Robert F., 513 Wynnewood Ave., Wynnewood, Pa.
1957. Oakey, Richard S., Jr., 309 Medical Bldg., Lankenau Hospital (30)
1947. O'Keefe, John J., 255 South 17th St.
1954. Olsen, Axel K., 230 N. Broad St. (2)
1913. O'Neal, Alexander Hay, St. Davids, Pa.
1949. O'Neill, James F., 140 Roslyn Ave., Glenside, Pa.
1954. O'Neill, Thomas J. E., Centennial Bldg., Front St. & Lehigh Ave. (25)
1947. Ornsteen, A. M., 2007 Delancey Pl.
1947. Ornston, Darius Gray, 36 Carpenter Lane
1936. Orr, Theodore E., 3815 Chestnut St. (4)
1958. O'Sullivan, Ward D., Misericordia Hospital (43)
1955. Ottenberg, Donald J., 3519 N. Broad St. (40)
1913. Outerbridge, George W., 1927 Spruce St.
1949. Padis, Nicholas, 255 S. 17th St.
1954. Palmer, Louis H., Bryn Mawr Medical Bldg., Bryn Mawr, Pa.
1909. Parish, Benjamin Dores, 704 Bethlehem Pike, Flourtown, Pa.
1945. Park, Felix Roman, 1980 Utica Sq., Tulsa, Okla.
1940. Parker, Alan P., Bryn Mawr Medical Bldg., Bryn Mawr, Pa.
1948. Parkhurst, Leonard Woods, 330 S. 9th St.
1944. Paschkis, Karl E., Jefferson Medical College.
1952. Paxson, Newlin F., 250 S. 18th St.
1932. Payne, Franklin L., Univ. of Pa. Hospital.
1954. Pearce, Alexander E., 1420 Race St. (2)
1958. Pearce, Rowan C., Jr., 514 Cooper St., Camden, N. J.

1943. Pearson, Gerald H. J., Presidential Apts.—Adams House.
1954. Pearson, Manuel M., 111 N. 49th St. (39)
1952. Peck, Roy I., 3400 Spruce St.
1930. Pendergrass, Eugene P., Univ. of Pa. Hospital.
1953. Penneys, Raymond, University of Pennsylvania Hospital (4)
1914. Pepper, O. H. Perry, 945 Parks Run Lane, Villanova, Pa.
1916. Percival, Milton Fraser, 2332 S. Broad St.
1942. Perkins, William Harvey, The Lenox, 13th & Spruce Sts. (7)
1946. Perloff, William Harry, 3521 N. Broad St.
1953. Persky, Abram H., 1737 Chestnut St. (3)
1940. Pessel, Johannes F., 224 West State St., Trenton, N. J.
1952. Peters, Michael, 262 W. Broad St., Telford, Pa.
1940. Pettit, Horace, Times Medical Bldg., Ardmore, Pa.
1949. Pettit, Mary DeWitt, 3343 W. Penn St. (29)
1915. Pfeiffer, Damon B., Meadowbrook, Pa.
1946. Pfeiffer, Mildred C. J., 358 Valley Rd., Merion, Pa.
1935. Phillips, Arthur W., 3904 Walnut St.
1911. Piersol, George Morris, 308 Kent Rd., Wynnewood, Pa.
1948. Pierson, Daniel B., Jr., 740 Beacon Lane, Merion, Pa.
1957. Pilling, George Platt, IV, 2600 N. Lawrence St. (33)
1933. Pillsbury, Donald M., Univ. of Pa. Hospital (4)
1950. Pincus, Irwin J., 269 S. 19th St.
1957. Platt, Ruth M., 441 Lyceum Ave. (28)
1951. Poinsard, Paul J., 2031 Locust St.
1937. Polk, David Stewart, Rosemont, Pa.
1956. Pontarelli, Domenic J., Rittenhouse Plaza, 1901 Walnut St. (3)
1953. Porreca, George, A., 1912 Spruce St. (3)
1932. Porter, Roland De Lance, Abington Medical Bldg., Abington, Pa.
1951. Post, Joseph W., 1930 Chestnut St.
1951. Pote, Harry H., 4032 Walnut St.
1958. Potter, H. Phelps, Jr., 3400 Spruce St. (4)
1951. Pressman, Robert S., 170 W. Olney Ave. (20)
1947. Prickett, John A., Warrington, Bucks County, Pa.
1954. Prince, Leon N., 2025 Spruce St. (3)
1931. Pryor, Charles Allen, 255 S. 17th St.
1952. Pugh, James E., 614 Church Lane, Yeadon, Pa.
1947. Putney, Floyd Johnson, 1712 Locust St. (3)
1958. Rachlin, Lillian, Veterans' Adm. Center, Whipple, Arizona
1943. Radbill, Samuel X, 7043 Elmwood Ave.
1953. Radbill, Sidney G., 37 S. 20th St. (3)
1945. Rakoff, Abraham Edward, 269 S. 19th St.
1953. Ralston, Edgar L., 3400 Spruce St. (4)
1931. Ramsey, Frank M., 620 E. Willow Grove Ave.
1953. Ranieri, Tito A., 2320 S. Broad St. (45)
1941. Rankin, Charles A., Ludlow & Heather Rd., Upper Darby, Pa.
1946. Rapaport, Milton, Children's Hospital, 1740 Bainbridge St.
1951. Rathmell, Thomas K., 446 Bellevue Ave., Trenton, N. J.
1926. Ravdin, I. S., Univ. of Pa. Hospital. (4)
1956. Ravdin, Robert Glenn, 3400 Spruce St. (4)
1959. Raventos, Antolin, 3400 Spruce St. (4)
1954. Reagan, Lindley B., 175 Madison Ave., Mt. Holly, N. J.
1960. Reed, Theodore P., Lankenau Medical Bldg. (31)

1928. Reese, Warren S., 2118 Locust St.
1920. Rehfuss, Martin E., 131 St. George's Rd., Ardmore, Pa.
1921. Reiff, E. Paul, 1927 Spruce St.
1919. Reimann, Stanley P., 703 W. Phil-Ellena St.
1958. Reinhardt, David J., III, 1600 N. Broom St., Wilmington, Del.
1956. Reishtein, William A., 255 S. 17th St. (3)
1951. Rentschler, Laurence B., 5800 Ridge Ave.
1945. Rhoads, Jonathan E., Univ. of Pa. Hospital (4)
1951. Richardson, Fred Mac D., 160 Carpenter Lane.
1919. Richardson, Russell, Phila. Tuberculosis Sanitorium #4, Corinthian & Girard Aves.
1951. Riegel, Donald, 5110 Chester Ave.
1942. Riggs, Helena E., 150 Hewitt Rd., Wyncote, Pa.
1936. Ritter, Joseph A., 2405 N. 54th St.
1932. Robbins, Frederick R., 317 Milbank Rd., Bryn Mawr, Pa.
1952. Robbins, Robert, 3401 N. Broad St. (40)
1960. Robbins, William S., 255 S. 17th St. (3)
1954. Roberts, Brooke, 3400 Spruce St. (4)
1939. Roberts, Ella, 133 S. 36th St.
1957. Roberts, Joan Mary, 4 W. Mt. Pleasant Ave. (19)
1932. Robertson, Harold F., 2118 Pine St.
1954. Robertson, Hugh, 255 S. 17th St. (3)
1938. Roche, Philip Q., Route 1, Conshohocken, Pa.
1960. Roeder, Paul H., 330 S. 9th St. (7)
1955. Rogers, Fred B., 3401 N. Broad St. (40)
1951. Ronis, Bernard J., 2106 Spruce St.
1948. Roscoe, Constantine R., 7226 Castor Ave.
1928. Rose, Edward, 426 Owen Rd., Wynnewood, Pa.
1936. Rose, Elizabeth Kirk, 426 Owen Rd., Wynnewood, Pa.
1959. Rose, Isadore, 6000 W. Oxford St. (31)
1952. Rose, S. Brandt, Chestnut Hill Hospital
1946. Rosemond, George Parrott, 3401 N. Broad St. (40)
1948. Rothman, Maurice M., 1727 Spruce St.
1951. Rouse, George P., Jr., 2031 Locust St.
1952. Roxby, Bruce S., 5501 Greene St.
1955. Roxby, John B., Jr., 4821 Germantown Ave. (44)
1949. Royster, Henry P., 3400 Spruce St.
1941. Royster, Hubert A., Jr., 888 Glenbrook Ave., Bryn Mawr, Pa.
1959. Rubin, Alan, 255 S. 17th St. (3)
1952. Rubin, I. Edward, 255 S. 17th St. (3)
1933. Rudolphy, Jay Besson, 230 S. 21st St.
1946. Rupp, Charles, 133 S. 36th St.
1947. Rush, Alexander, 330 S. 9th St.
1960. Russell, George W., 136 S. 16th St. (2)
1945. Rynes, Samuel E., 334 S. 21st St.
1952. Sain, Fletcher D., 8 Orchard Ave., Bristol, Pa.
1958. Sall, Manuel, 255 S. 17th St. (3)
1952. Salner, Nathan P., 6812 Castor Ave. (24)
1952. Saltzman, Maurice, 2037 Spruce St.
1944. Sampson, David Alan, 726 Braeburn Lane, Penn Valley, Narberth, Pa.
1936. Sands, Joseph Evans, Rosemont, Pa.
1950. Sarner, Joseph B., 269 S. 19th St. (3)
1949. Saul, Leon J., Highland Ave., Media, Pa.

1908. Sautter, Albert C., Germantown Professional Bldg.
1954. Savacool, J. Woodrow, 146 W. Tulpehocken St. (44)
1947. Saÿen, John J., 3600 Spruce St. (4)
1948. Scarano, Joseph Albert, 1432 S. Broad St.
1917. Schaeffer, J. Parsons, 4634 Spruce St. (39)
1929. Scheffey, Lewis C., 255 S. 17th St.
1942. Scheie, Harold G., 313 S. 17th St.
1929. Schenck, Harry P., 1235 Wyngate Rd., Wynnewood, Pa.
1945. Schlezinger, Nathan S., 255 S. 17th St.
1917. Schnabel, Truman G., 1704 Pine St.
1958. Schnabel, Truman G., Jr., Phil. General Hospital (4)
1957. Schnall, Nathan, 2037 Pine St. (3)
1955. Schraeder, Charles J., 318 W. Godfrey Ave. (20)
1958. Schreck, Kenneth M., Temple Univ. School of Medicine (40)
1952. Schulz, Norbert J., 1901 Walnut St.
1950. Schumann, Francis N., 8811 Germantown Ave.
1948. Schwarz, Gabriel A., 133 S. 36th St. (4)
1955. Schwegman, Cletus W., Hospital of the University of Penna. (4)
1930. Scott, John Porter, Children's Hospital, 1740 Bainbridge St.
1950. Scott, Michael, 3401 N. Broad St. (40)
1940. Scott, T. F. McNair, Children's Hospital, 1740 Bainbridge St. (46)
1952. Seifer, Arthur F., 3401 N. Broad St. (40)
1954. Seifter, Joseph, Wyeth Institute for Medical Research (1)
1957. Seipel, Russell C., 6000 Jefferson St. (31)
1951. Seitchik, Joseph N., 1417 Race St., Hahnemann Medical College Annex
1958. Sellers, Alfred M., Hosp. of the Univ. of Pa. (4)
1952. Semisch, Charles W., III, 5329 Rising Sun Ave.
1958. Shafer, Albert H., 1004 E. Cherry Hill Apts., Merchantville 10, N. J.
1950. Sharp, Reuben L., 719 Cooper St., Camden, N. J.
1928. Sharpless, Frederick C., Beach Haven, N. J.
1956. Shaw, Daniel L., Jr., 702 Knox Rd., Villanova, Pa.
1948. Shay, Harry, 3400 N. Broad St.
1955. Shechter, Fred R., 2461 No. 54th St. (31)
1954. Shelley, Walter B., 36th & Spruce Sts. (4)
1955. Shenkin, Henry A. 255 S. 17th St. (3)
1946. Shepherd, Samuel Garfield, 2039 Pine St.
1932. Sheridan, Joyce T., 412 W. Durham St.
1956. Sherson, Jacob S., 131 Channing Ave., Malvern, Pa.
1936. Shipman, James Shelby, 255 S. 17th St.
1958. Shipps, Hammell P., 719 Cooper St., Camden 2, N. J.
1957. Shope, Edward Pierce Lentz, 807 Wilson Bldg., Camden, N. J.
1946. Shoup, George Daniel, 121 W. Walnut Lane (44)
1955. Shubin, Harry, 6601 N. 21st St. (38)
1952. Shuman, Charles R., 3401 N. Broad St.
1936. Shuster, Benjamin H., 1824 Pine St.
1949. Sidlick, David M., 255 S. 17th St.
1941. Silcox, Louis E., Lankenau Medical Bldg. (31)
1956. Sillars, Charles H., Abington Memorial Hospital, Abington, Pa.
1955. Silverstein, Alexander, 2114 Pine St. (3)
1954. Singmaster, Lawrence, Lankenau Medical Bldg. (31)
1952. Skromak, Stanley, J., 5108 Torresdale Ave.
1958. Sloviter, Henry A., 3400 Spruce St. (4)

1929. Smith, Austin T., 1830 Spruce St.
1955. Smith, J. Winslow, 3034 Darby Rd., Ardmore, Pa.
1933. Smith, Lauren Howe, 111 N. 49th St.
1952. Smith, Richard T., 330 S. 9th St.
1927. Smyth, Calvin Mason, Abington Memorial Hospital, Abington, Pa.
1951. Snape, William J., 573 Stevens St., Camden, N. J.
1938. Snodgrass, L. E., 709 Walnut St. (6)
1953. Snyder, G. Gordon, Bryn Mawr Medical Bldg., Bryn Mawr, Pa.
1958. Sodeman, William A., 1025 Walnut St. (7)
1935. Sokoloff, Martin J., 255 S. 17th St.
1951. Solis-Cohen, Leon, 1530 Locust St. (2)
1940. Soloff, Louis A., 3401 N. Broad St. (40)
1950. Somerville, William J., 2022 Locust St.
1935. Sommer, George N. J., 120 W. State St., Trenton, N. J.
1944. Sommer, George N. J., Jr., 120 W. State St., Trenton, N. J.
1952. Sones, Maurice, Mt. Airy Medical Bldg.
1951. Sonneborn, Duane G., 1200 W. Erie Ave.
1928. Spaeth, Edmund B., 1930 Chestnut St.
1958. Spaeth, Philip G., 1930 Chestnut St. (3)
1937. Spangler, John Luther, Devon, Pa.
1957. Spelman, Joseph Worcester, Dept. of Public Health Dev. Examiner, 13th & Wood Sts. (7)
1935. Spiegel, Ernest A., 6807 Lawnton Ave.
1955. Spitz, Eugene B., Children's Hospital (46)
1958. Splendido, Joseph A., 608 W. Cliveden (19)
1960. Stainback, William C., Bryn Mawr Medical Bldg., Bryn Mawr, Pa.
1957. Stanley, Robert C. G., 2315 Edgemont Rd., Chester, Pa.
1927. Starr, Isaac, 505 Cresheim Valley Rd.
1952. Stauffer, Herbert M., 3401 N. Broad St. (40)
1952. Stayman, Joseph W., Jr., Germantown Hospital.
1945. Stecher, H. Armin, 1510 Darby Rd., Havertown, Pa.
1955. Steel, Howard H., 3401 N. Broad St. (40)
1952. Steiger, William A., 3401 N. Broad St. (40)
1946. Stein, Irvin, 1936 Spruce St.
1953. Stein, Raymond O., 269 S. 19th St. (3)
1936. Steinfield, Edward, N. E. Cor. 18th and Chestnut Sts.
1942. Stengel, Alfred, Jr., 160 Hodge Rd., Princeton, N. J.
1951. Sterling, Julian A., 1008 Sharpless Rd., (26)
1948. Stevens, Lloyd W., 133 S. 36th St.
1925. Stokes, John H., 4228 Spruce St.
1928. Stokes, Joseph, Jr., Children's Hospital, 1740 Bainbridge St.
1943. Stokes, S. Emlen, 129 Chester Ave., Morrestown, N. J.
1954. Stone, Hrant H., E. Shawmont Ave. (28)
1952. Stoner, Emery K., 222 E. Mt. Pleasant Ave.
1953. Strawbridge, Rendall R., Lankenau Medical Bldg. (31)
1937. Strumia, Max M., Penn Valley, Narberth, Pa.
1960. Strumia, Paul V., Bryn Mawr Hospital, Bryn Mawr, Pa.
1937. Sturgis, Margaret C., 349 Wistar Rd., Wynnewood, Pa.
1927. Sturgis, Samuel Booth, 349 Wistar Rd., Wynnewood, Pa.
1934. Summey, Thomas J., Burlington County Hosp., Mt. Holly, N. J.
1930. Sunderman, F. William, 1833 Delancey Place (3)
1936. Surver, James Miller, 1015 Walnut St.
1954. Sussman, Marcel S., 101 S. 20th St. (3)

1952. Sweeney, Francis X., 2412 E. Allegheny Ave. (34)
1955. Taggart, Harold A., 235 N. 15th St. (2)
1952. Talbot, Timothy R., Jr., 204 Booth Lane, Haverford, Pa.
1943. Tassman, Isaac S., 136 S. 16th St.
1946. Tauber, Robert, 2019 Walnut St.
1952. Taylor, Ann Gray, 6364 Germantown Ave.
1931. Taylor, Norman H., 100 W. Evergreen Ave.
1956. Templeton, John Y., III, 1025 Walnut St. (7)
1951. Theodos, Peter A., 1930 Chestnut St.
1959. Thomas, Arthur H., 5240 Vine St. (39)
1946. Thomas, Carmen C., 1930 Chestnut St.
1952. Thompson, Charles M., 255 S. 17th St.
1927. Thorington, J. Monroe, 37 S. 20th St. (3)
1936. Thorp, Francis Quicksall, 4900 Penn St.
1936. Thudium, William J., 136 S. 16th St.
1954. Tindall, Dorothy D., 37 S. 20th St. (3)
1935. Tocantins, Leandro Maués, 1025 Walnut St.
1935. Toland, Owen J., Episcopal Hospital, Front and Lehigh Aves.
1952. Tondreau, Roderick L., 6470 Drexel Rd. (31)
1959. Toole, James F., Univ. of Pa. Hospital, 3400 Spruce St. (4)
1949. Tornay, Anthony S., 37 S. 20th St.
1945. Tourish, William J., 250 S. 17th St.
1936. Towson, Charles Emory, 224 W. Washington Lane (44)
1955. Trimpi, Howard D., 1016 Hamilton St., Allentown, Pa.
1954. Trommer, Philip R., 258 S. 18th St. (3)
1956. Troncelliti, Mario V., Pennsylvania Hospital (7)
1953. Tropea, Frank, Jr., 500 Mulberry Lane, Haverford, Pa.
1947. Trueman, Robert H., 2101 Chestnut St. (3)
1954. Truitt, R. Marshall, Jr., 740 West View St. (19)
1959. Tuddenham, William J., 3400 Spruce St. (4)
1938. Tuft, Louis, 1530 Locust St.
1933. Tumen, Henry J., 1900 Rittenhouse Sq.
1938. Turman, Christopher M., Wyncote, Pa.
1923. Turner, Creighton, H., 1731 Pine St.
1954. Turner, Linton W., 3401 N. Broad St. (40)
1929. Tyson, Ralph M., 255 S. 17th St.
1959. Tyson, R. Robert, 3401 N. Broad St. (40)
1937. Uhle, Charles A. W., Lankenau Medical Bldg. (31)
1953. Ulin, Alexander, W., 230 N. Broad St. (2)
1907. Ullom, Josephus T., Carpenter and Quincy Sts.
1960. Uricchio, Joseph F., 249 N. Broad St. (7)
1950. Valdes-Dapena, Antonio, 3006 Midvale Ave., Phila. (29)
1958. Van den Noort, Gordon S., 888 Glenbrook, Bryn Mawr, Pa.
1937. Vander Veer, Joseph B., 330 S. 9th St.
1937. Van Loon, Emily Lois, 1930 Chestnut St.
1960. Van Meter, Ralph H., 244 W. Main St., Moorestown, N. J.
1933. Vastine, Jacob H., 2nd, 136 S. 16th St.
1958. Velkoff, Cyril L., 2100 Walnut St. (3)
1955. Viek, Peter, 1941 Woodland Rd., Abington, Pa.
1952. Vischer, Thomas J., 5903 Greene St.
1940. Voegelin, Adrian W., Germantown Professional Bldg.
1941. Vogel, Stoughton R., 151 W. Tulpehocken St.

1960. Wagenheim, Harry H., 1822 Spruce St. (3)
1949. Wagner, Frederick B., Jr., 800 Chauncy Road, Narberth, Pa.
1949. Wagner, Joseph A., 201 Highland Ave., Bryn Mawr, Pa.
1954. Wainer, Amos S., 1621 Spruce St. (2)
1938. Waldman, Joseph, 404 Meadowbrook Lane
1955. Waldron, Jerome M., 2300 Cheltenham Ave. (50)
1932. Walkling, Adolph A., 136 S. 16th St.
1955. Warner, Halsey F., 100 W. Coulter St. (44)
1956. Watkins, E. Lloyd, 8815 Germantown Ave. (18)
1954. Waugh, Elizabeth S., 348 Green Lane (28)
1952. Weaver, Harry S., Jr., 37 S. 20th St.
1955. Weaver, Robert L., 530 Walnut St. (5)
1941. Weaver, Ruth H., 2601 Parkway.
1953. Weber, Lennard L., 255 S. 17th St. (3)
1957. Webster, Marie Blanchefield, 5428 N. 5th St.
1930. Weeder, S. Dana, 250 W. Tulpehocken St.
1954. Weiner, Louis H., Carlene Apts. 2500 Belmont Ave. (31)
1952. Weinstein, George L., 255 S. 17th St.
1954. Weinstock, Horace L., 329 S. 18th St. (3)
1950. Weiss, Sidney, 1930 Chestnut St.
1959. Wellenbach, Burton L., 255 S. 17th St. (3)
1951. Welty, Jack W., Montgomery Ave. & Owen Rd., Wynnewood, Pa.
1955. Wendkos, Martin H., 4015 Baltimore Ave. (4)
1959. West, Clifton F. Jr., 406 Lankenau Medical Bldg. (31)
1959. Whayne, Tom F., 36th & Spruce Sts. (4)
1935. Whelan, G. L., 2100 Walnut St.
1921. Whitaker, William, 4645 Oakland St.
1936. White, Ellen Pawling Corson-, Gladwyne, Pa.
1925. Widmann, Bernard P., 250 S. 18th St.
1954. Wieder, Henry S., Jr., 330 S. 9th St. (7)
1939. Willauer, George, 6129 Greene St.
1907. Williams, Carl, School Lane and Greene St.
1937. Williams, John C., 6370 Germantown Ave.
1920. Williams, Philip F., 353 Bala Ave., Bala-Cynwyd, Pa.
1950. Williams, R. G., Univ. of Pa. School of Medicine (4)
1927. Williamson, Ernest G., 6353 Woodbine Ave.
1949. Willson, J. Robert, 3401 N. Broad St. (40)
1945. Wilson, John F., 2013 Delancey Pl.
1937. Wilson, Ross B., Lankenau Medical Bldg. (31)
1949. Wilson, William W., 133 S. 36th St.
1957. Winkelman, N. William, Jr., 1930 Chestnut St. (3)
1948. Winston, Julius, 5839 Chester Ave.
1941. Wirts, C. Wilmer, 2017 Delancey St.
1953. Wohl, George T., 1227 Remington Rd., Wynnewood, Pa.
1933. Wohl, Michael G., 1727 Pine St.
1958. Woldow, Irving, Einstein Med. Center, York & Tabor Rds. (41)
1958. Wolf, John H., 124 W. Walnut Lane (44)
1944. Wolf, Lewis R., 3474 Frankford Ave.
1918. Wolferth, Charles C., 133 S. 36th St.
1957. Wolgamot, John R., 244 W. Main St., Morrestown, N. J.
1957. Wolkowicz, Michael I., 2022 Spruce St. (3)
1942. Wolman, Irving J., 7607 Woodlawn Ave. (26)
1950. Wood, Dorothy D., 2035 Walnut St.
1932. Wood, Francis C., 212 Laurel Lane, Haverford, Pa.

1944. Wood, H. Curtis, Jr., Skippack Pk., Whitemarsh, Pa.
1953. Woodruff, Marston T., 4940 Penn. St. (24)
1928. Wright, Carroll S., 1402 Spruce St.
1960. Yanoff, Jacob, 1000 Johnston St. (48)
1921. Ylvisaker, Lauritz S., Fidelity Mutual Life Ins. Co., Parkway at Fairmount (30)
1941. Young, Barton R., Germantown Hospital
1953. Zarafonetis, Chris J. D., 3401 N. Broad St. (40)
1957. Zaslow, Jerry, 1351 Tabor Rd. (41)
1955. Zatuchni, Jacob, 3401 N. Broad St. (40)
1946. Zeigerman, Joseph H., 2105 Spruce St. (3)
1949. Zintl, William J., 69th & Market Sts., Upper Darby, Pa.
1956. Ziserman, Abraham J., 2046 Pine St. (3)
1933. Zulick J. Donald, Abington Memorial Hospital, Abington, Pa.

Non-Resident Fellows

ELECTED

1912. Addison, William H. F., 286 East Sidney Avenue, Mt. Vernon, N. Y.
1947. Allbritten, Frank F., Jr., Univ. of Kansas Medical Center, Kansas City 3, Kansas.
1960. Ames, Mary Daniel, 2039 N. 2nd St., Harrisburg, Pa.
1941. *Aronson, Roland S., Walter Reed Army Hospital, Washington 12, D. C.
1954. Austin, George M., University of Oregon Medical School, Portland, Oregon.
1934. Bank, Joseph, 800 N. First Ave., Phoenix, Arizona
1931. Bates, William, Harrisburg Hospital, Harrisburg, Pa.
1932. Behney, Charles A., Dept. of Health, Old DeWitt Rd., Lansing, Mich.
1955. Blank, Harvey, Jackson Memorial Hospital, Miami 36, Fla.
1921. Borzell, Francis F., R. D. 2, Box 2051, Browns Mills, N. J.
1937. Braceland, Francis J., The Institute of Living, 200 Retreat Ave., Hartford, Conn.
1955. Brinton, S. Jervis, 115 92nd St., Stone Harbor, N. J.
1948. *Brown, Robert B., U. S. Naval Hospital, Bethesda, Md.
1953. Burbidge, J. Raymond, 163 Nassau St., Princeton, N. J.
1957. Butterworth, Thomas, 411 Walnut St., Reading, Pa.
1948. Chapman, John P., Calle Fray Junipero Serra 26, Palma de Mallorca, Balearic Islands, Spain.
1950. Chapple, Charles C., 1530-16th St., Washington, D. C.
1941. Cheleden, John, 133 Broadway, Daytona Beach, Fla.
1930. Clarke, Francis Mann, 116 New St., New Brunswick, N. J.
1934. Clark, Jefferson, H., 101 Maple Ave., Wyncote, Pa.
1926. Clerf, Louis H., 5575-8th Ave., North, St. Petersburg, Fla.
1930. Cottrell, James E., McGuire Veteran's Administration Hospital, Richmond 19, Va.
1959. *Cowan, Capt. John S., U. S. Naval Hospital (45)
1960. Cowley, Allen W., Sr., 1919 N. 25th St., Camp Hill, Pa.
1940. Crowe, Aldrich C., 1208 Ocean Ave., Ocean City, N. J.
1947. Cutler, Norman L., 1300 Harrison St., Wilmington, Del.
1941. *Cuttle, Tracy D., U. S. Pacific Fleet Post Office, San Francisco, Calif.
1955. Daugherty, J., Arthur, 1511 N. Front St., Harrisburg, Pa.
1954. Deitrick, John E., Cornell Medical College, 1300 York Ave., New York 21, N. Y.
1941. Dixon, Harold M., 4805 46th St., N.W., Washington 16, D. C.
1959. Durgin, Bernice Elise, 221 N. Allegheny St., Bellefonte, Pa.
1937. Dunn, Charles W., Grange Ave., Collegeville R. R. # 1, Pa.
1953. Eberhard, Theodore P., St. Joseph Mercy Hosp., Ann Arbor, Mich.
1955. Edwards, Margaret Hay, 224 W. State St., Trenton, N. J.

* Military service.

1951. Ellis, Mackinnon, Veteran's Hospital, White River Junction, Vt.
1957. *Errion, Arthur Robbins, U. S. Naval Hospital, Key West, Fla.
1951. Ervin, Carl E., 240 North Third Street, Harrisburg, Pa.
1944. Estes, W. L., Jr., 35 E. Elizabeth Ave., Bethlehem, Pa.
1954. Evans, Harry D. Jr., American Cyanamid Co., 1 Caspar St., Danbury, Conn.
1952. Faller, Constantine, P., 127 State St., Harrisburg, Pa.
1940. Forrester, James S., Harrisburg Polyclinic Hospital, Harrisburg, Pa.
1951. Friedland, Carl K., 271 W. Blackwell St., Dover, N. J.
1947. Gaskill, Herbert S., 250 Ash St., Denver, Colorado.
1913. Gates, Nathaniel, 10 Peterboro, Detroit, Mich.
1958. Geckler, George D., Tranquility, S. Windham, Vt.
1957. Giering, John Fleming, 84 James St., Kingston, Pa.
1931. Gilman, Robert Louis, Cheyney, Pa.
1954. Godfrey, Ellwood W., Princeton Hospital, Princeton, N. J.
1928. Gordon, Burgess L., The Lovelace Foundation, Albuquerque, New Mexico.
1952. Grieco, Reynold M., 2 W. 4th St., Williamsport, Pa.
1952. Gross, Elmer R., Medical Arts Bldg., Wilmington, Del.
1933. Gruber, Charles M., 1313 College Ave., Redlands, Calif.
1955. Harris, John H., 1301-A N. Second St., Harrisburg, Pa.
1936. Hatch, Lerleen Clement, 2184 Ayres Ave., Akron, Ohio.
1928. Hayman, Joseph Marchant, Jr., Tufts College Medical School, Boston, Mass.
1944. Hershey, J. Ivan, VA Hospital, Shreveport, La.
1955. Hills, Arthur G., 1000 N. W. 17th St., Miami, Fla. (36)
1933. Hitzrot, Lewis H., Medical Director, Mercersburg Academy, Mercersburg, Pa.
1950. Horn, Robert C., Henry Ford Hospital, Detroit, Mich.
1938. Howell, John C., 1104 Logan Ave., Tyrone, Pa.
1936. Hughes, Brady A., 312 Euclid Ave., Mt. Brook, Birmingham, Ala.
1953. Imber, Irving, 428 Walnut St., Reading, Pa.
1958. Impink, Robert R., 405 Oley St., Reading, Pa.
1935. Ingleby, Helen, The Church House, Heacham, King's Lynn, England
1921. Ivy, Robert H., 104 Dalton Rd., Paoli, Pa.
1952. Jones, Ralph, Jr., Jackson Memorial Hospital, Miami, Fla.
1955. Jordan, Charlotte B., 519 Sarah St., Stroudsburg, Pa.
1955. Jordan, Claus G., 519 Sarah St., Stroudsburg, Pa.
1956. Keffer, William H., 413 Oley St., Reading, Pa.
1947. Kelchner, Clyde H., 1125 Turner St., Allentown, Pa.
1944. LaMotte, William O., Brook Hill Farms, Hockessin, Del.
1954. LaMotte, William O., Jr., Professional Bldg., Wilmington 3, Del.
1952. Levan, John B., 401 Oley St., Reading, Pa.
1949. Lhamon, William T., Baylor University College of Medicine, Houston, Tex.
1954. Light, John J. B., 25 N. 9th St., Lebanon, Pa.
1954. Lindenmuth, Woodrow W., VA Hospital, West Haven, Conn.
1948. Livingood, Clarence S., Henry Ford Hospital, Detroit 2, Mich.
1933. Long, Esmond R., Conifer, Pedlar Mills, Va.
1919. Lynch, Frank B., Jr., U. S. Veterans Hospital, Coatesville, Pa.
1948. McCall, Milton L., Elizabeth Steel Magee Hospital, Pittsburgh Pa. (13)
1954. McCrory, Wallace W., Dept. of Pediatrics, University Hospital, Iowa City, Iowa
1948. McLaughlin, John T., 1252 S. Central Ave., Glendale, Calif.
1953. Margolies, Michael, 567 E. Chestnut St., Coatesville, Pa.
1955. Margolies, M. Price, 567 E. Chestnut St., Coatesville, Pa.
1935. Mason, James B., 40 E. Erie St., Chicago 11, Ill.
1932. Meade, Richard H., Jr., 750 San Jose Dr., Grand Rapids, Mich.
1949. Menkin, Valy, School of Dentistry, Univ. of Kansas City, Kansas City, Mo.

1936. Middleton, William Shainline, Veteran's Administration, Washington, D. C.
1946. Miller, Franklin R., Snyder-Jones Clinic, First Nat. Bk. Bldg., Winfield, Kansas.
1928. Moon, Virgil H., Univ. of Miami, Coral Gables, Fla.
1949. Motley, Hurley L., 1212 Shatto St., Los Angeles, Calif.
1950. Neefe, John R., 627 Eleventh St., St. Petersburg, Fla.
1937. Nicholson, Samuel T., 2d., 642 High St., Pottstown, Pa.
1941. Nisbet, Verner, 714 Queens Rd., Charlotte 7, N. C.
1956. Oppenheimer, Albert, 224 E. Main St., Moorestown, N. J.
1926. Paul, John Rodman, Dept. Preventive Medicine, Yale University, New Haven, Conn.
1959. Pendergrass, Henry P., Nat'l Hosp. for Nervous Diseases, Queen's Square, London W.C.1, England
1922. Pleasants, Henry, West Chester, Pa.
1953. Raffensperger, Edward C., 2039 N. 2nd St., Harrisburg, Pa.
1938. Read, Hilton S., 5407 Atlantic Ave., Atlantic City, N. J.
1936. Reisinger, John A., 901 20th St., N. W., Washington, D. C.
1955. Rettew, Philip L., 612 Museum Rd., Reading, Pa.
1947. Rogers, Arthur Merriam, 1351 Durwood Drive, Charlotte, N. C.
1907. Royer, B. Franklin, 429 E. Baltimore St., Greencastle, Pa.
1956. Rubenstone, Albert I., Michael Reese Hosp., Chicago, Ill.
1954. Sampson, Martin C., Keydross Lane, Saratoga, N. Y.
1953. Scanlan, Robert L., St. Vincent's Hospital, 2131 W. 3rd St., Los Angeles 57, Calif.
1945. Schell, James F., 139 W. Maple Ave., Langhorne, Pa.
1928. Schofield, Frederick S., Veteran's Administration Hospital, Fort Wayne, Ind.
1921. Schumann, Edward A., "Henneberg", Chalfont, Pa.
1913. de Schweinitz, George L., 3231 Arroyo Chico, Tucson, Ariz.
1941. Shands, Alfred R., Jr., Alfred I. duPont Institute, Rockland Rd., Wilmington, Del.
1908. Shannon, Charles E. G., 9 Park St., Waterville, Maine.
1950. Shiffer, Paul H., Dreher Ave., R.D. #2, Stroudsburg, Pa.
1951. Shorey, Winston K., Jackson Memorial Hospital, Miami, Fla.
1932. Siegel, Alvin Erdreich, 464 W. Buford Rd., Macon, Ga.
1933. Smelzer, Donald C., Lancaster General Hospital, Lancaster, Pa.
1954. Smith, Charles W., 121 State St., Harrisburg, Pa.
1929. Sponsler, Marshall B., 103 Lansdowne Road, DeWitt, N. Y.
1953. Steele, Brandt F., 717 Pontiac St., Denver 20, Colo.
1952. Steele, Eleanor, 717 Pontiac St., Denver 20, Colo.
1955. Stevenson, Theodore D., Presbyterian Board of Foreign Missions, 156 Fifth Ave., New York 10, N. Y.
1934. Stewart, Sloan G., Pacific and North Carolina Avenues, Atlantic City, N. J.
1931. Stiles, Merritt H., 104 5th Ave., Spokane 4, Wash.
1949. Stockwell, Eunice L., Tryon, N. C.
1953. Stroud, Morris W., 3rd, Harvard Rd., Cleveland, Ohio
1944. Swenson, Paul C., The Charles T. Miller Hospital, 125 W. College Ave., Saint Paul 2, Minnesota.
1928. Thomas, J. Earle, College of Medical Evangelists, School of Medicine, Loma Linda, Calif.
1942. Thompson, Wesley D., 247 E. 3rd St., Lewistown, Pa.
1941. Tompkins, Pendleton, 450 Sutter St., San Francisco, Calif.
1897. Veasey, Clarence A., 1118 W. 9th Ave., Spokane 9, Wash.
1933. Waygood, James L., Pocono Pines, Pa.
1936. Wilder, Theodore S., Beckley Memorial Hospital, Beckley, W. Va.
1935. Willard, John H., Harlan Memorial Hospital, Harlan, Kentucky.
1953. Wilson, Julius L., Natl. Tuberculosis Assn., 1790 Broadway, New York City (19)
1957. Witkow, Alexander, 401 Columbia Road, Hamilton, Ohio
1952. Wood, Horatio C., III, 5319 Prospect Rd., Peoria, Ill.
1947. Zintel, Harold A., St. Luke's Hospital, Amsterdam Ave. & 113th St., New York 25, N. Y.

Honorary Fellows

Limited to Fifty, of Whom Twenty May Be Foreigners

AMERICAN

ELECTED

1959. FAY, MARION, B.A., M.A., PH.D., SC.D.(HON.), LL.D.(HON.), Woman's Medical College, Henry Ave. & Abbottsford Rd. (29)

1936. RICHARDS, ALFRED NEWTON, PH.D., SC.D., M.D. (HON.), LL.D., Emeritus Professor of Pharmacology, School of Medicine, and Associate Trustee, University of Pennsylvania.

1942. RUSSELL, FREDERICK FULLER, M.D., Brig. Gen. Med. Corps, U.S.A. (Ret.). Lime Kiln Lane Route 1, Box 488R, Louisville, Kentucky. d 1968

1958. SHRYOCK, RICHARD H., PH.D., American Philosophical Society, Independence Square (6)

1947. STONE, ROBERT SPENCER, M.D., University of California Medical School, San Francisco, Cal.

FOREIGN

1937. DALE, SIR HENRY HALLET, C.B.E., F.R.S., M.A., M.D., F.R.C.P., 52 Queen Anne St., London, W. 1, England.

1922. MCCARRISON, SIR ROBERT, KT., C.B.E., M.D., D.SC., LL.D., F.R.C.P., Major-General, Indian Medical Service (retired). 18 Linton Rd., Oxford, England.

1955. MANN, IDA, M.A., D.SC., M.B., B.S., L.R.C.P., D.O.M.S., F.R.C.S. Ophthalmic Consultant to the Government of W. Australia, 56 Hobbs St., Nedlands, Perth, W. Australia.

Honorary Associate Fellows

1955. CLEMENT, MARTIN W., 1964 Suburban Station Bldg. (3)

1955. DIEMAND, JOHN A., President, Insurance Company of North America, 1600 Arch St. (2)

Necrological List

Resident Fellows	*Date of Election*	*Date of Death*
COATES, GEORGE M.	May 6, 1903	February 7, 1960
COLCHER, ABRAHAM E.	January 5, 1955	June 28, 1959
CRAIG, FRANK A.	May 6, 1903	May 14, 1959
DILLON, EDWARD S.	October 1, 1924.	October 9, 1959
FRALEY, FREDERICK	January 3, 1906	June 25, 1959
HERRMAN, CLINTON S.	January 3, 1955	March 22, 1959
JONES, HAROLD W.	October 1, 1924	September 1, 1959
KREMER, DAVID N.	April 20, 1949	January 29, 1960
MCCARTHY, PATRICK A.	January 6, 1936	October 23, 1959
PERRI, ANGELO M.	October 3, 1936	September 18, 1959
SHARPLESS, ISAAC	February 5, 1958	April 27, 1959
SOLIS-COHEN, MEYER	January 2, 1907	January 8, 1960
STADIE, WILLIAM C.	April 5, 1944	September 11, 1959
STROUD, WILLIAM D.	October 3, 1923	August 19, 1959
TOLAND, JOSEPH J.	January 7, 1935	October 19, 1959
WAGERS, ARTHUR J.	January 10, 1927	December 18, 1959
WEISS, EDWARD	May 2, 1923	January 13, 1960
WILSON, GEORGE	October 5, 1921	March 23, 1959
WOOD, ALFRED C.	October 4, 1893	October 2, 1959

Non-Resident Fellows	*Date of Election*	*Date of Death*
Bixby, Edward W.	April 19, 1949	August 20, 1959
Cadbury, William T.	June 3, 1908	October 15, 1959
Pearce, Louise	October 1, 1947	August 9, 1959

Honorary Fellows	*Date of Election*	*Date of Death*
Miner, Charles Howard	January 3, 1917	July 12, 1959

(Suggested Form of Bequest)

I hereby give, devise, and bequeath to the College of Physicians of Philadelphia, a charitable and educational association organized under the laws of the Commonwealth of Pennsylvania and the executive offices whereof are located in the City of Philadelphia, the sum of.....

a. which sum shall be used for the general purposes of said association;

b. which sum shall be added to and become a part of the general endowment fund of said association;

c. which sum shall be used by said association preferably for the following purposes:

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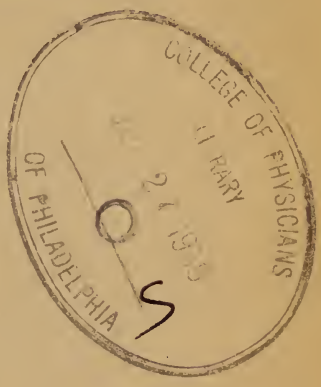

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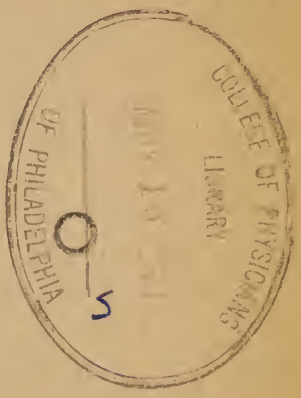

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